A hike we cannot avoid

Readers of *Teacher Plus* would know that in this age of inflation, the price of the magazine has remained steadfast over the past 15 years. Paper costs have gone up, printing costs have risen considerably, and the post office too has revised its prices upward though at a more modest rate. The team has kept a tight ship afloat, just about, resisting or maybe even denying the need to rethink the magazine's cover price and subscription rates, helped of course by the generosity of Azim Premji University. But it's been impossible to reconcile these rising costs of production with what we have been charging our subscribers, and it has been a hard but necessary decision to up the price of the magazine. The new rates will be Rs. **80** for a single issue, and Rs. **800** for an annual subscription, Rs. **1500** for two years and Rs. **2300** for a three year subscription. These new rates will go into effect from **April 2023**.

Existing subscribers will continue to receive their issues until their subscription comes up for renewal, at which time they will be reminded to renew at the new rates.

Teacher Plus has over the years gathered its content from a small but steady community of educators, parents, teacher trainers, school administrators, and others with an interest in education. We're appreciative of your loyalty, and hope you will continue to remain a part of our exploration of the many issues that concern learning and learning contexts.

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contents

Cover: Reflective responses

Shweta Bindu Allam is a visual communication designer. She loves to travel and sketch the things she sees to capture the moments. She loves illustrating for children books and comics. She believes that one visual has the power of a thousand words. She is also a full time foodie who is in love with momos. She can be reached at <shweta.allam@nid.ac.in>.

Productive disruptions

It's the second month of the year and it already seems old. I no longer have to pause before I write the numerals on a letter or as I date a signature. Some temporary habits are easy to acquire. But then again, some old habits really do die hard.

As teachers, many of us yearn for some level of comfort in a classroom. We like the routine of a repeated lecture and the familiarity of practiced arguments. We enjoy just the right bit of debate and discussion, stopping things before they reach a point that we might describe as "out of control". In fact, we do everything we can to keep our lessons calm and our students comfortable – intellectually, psychologically, and emotionally. While all sorts of conflicts arise in the outside world, we see the school, and the classroom, as a safe haven that is insulated from the politics of that world.

The African-American writer bell hooks (yes, all lower case) once said that the classroom is a space of possibility, a space where transformations can happen.

But these transformations require a stimulus, an ignition point that sparks a break in the cycle of habit. The stimulus is something that breaks the continuity, the regular way of doing something.

In this issue of *Teacher Plus* our cover theme addresses two ways in which we can introduce "disruption" in the classroom and in the thinking of students. The first relates to the way in which we offer feedback to various stakeholders in the school system – students, colleagues, administrators, support staff. The simple mechanism of offering comments on work done can be skillfully transformed into a tool that makes people think and then, possibly, apply it to how they look at a task. The second piece discusses how we can navigate difficult topics – without avoiding what we worry might end up being quite contentious and problematic – and use such moments in a way that avoids alienating some students or indulging others.

Both pieces aim to "disturb" our habitual practices in a way that pushes us to think differently and more deeply about pedagogy. There are of course many other things that we can do to consciously question our settled ways of teaching and introduce minor disruptions just to shake us out of our complacency so that we constantly grow and learn. As Neerja Singh shows us in her column on new trends, it's important to stay aware, to stay ahead of the curve – and this pertains to more than just technology!

Usha Raman

Getting on 'board' for social studies

Shalini Sabikhi

Board games have been popular among the young and old since ancient times. The discovery of dice in the Indus Valley site in Gujarat proves that even the Harappans played board games. Board games have been mentioned in literature, can be seen in sculptures, and also in paintings. In the Mahabharata, a game of dice causes the Pandavas to lose their kingdom. Chausar is a dice game similar to Ludo. Other popular board games were Pachisi, Moksha Patam, Chaturanga, Ashta Chamma, Chaupar, Wagh Bakri, Chaturanga, etc. Today's generation enjoys board games such as Risk, Chess, Chinese Checkers, Monopoly, Business, Scrabble, etc.

Photos courtesy: Shalini Sabikhi

Apart from recreation, board games can also be a source of learning. Various concepts can be revised in a fun way with the help of board games. They are fun to play and great to make. Students can design and make their own social studies board games by following a few guidelines:

★ When you want to design a board game, first think of the objective. For example, the objective of Ludo is to reach the home in the centre. The objective of Chess is to checkmate the opponent's king.

★ Decide what the players will learn while playing the game.

★ Then plan the mechanics, i.e., what should be done to play the game like rolling dice, moving counters, using strikers, etc.

★ Think of the components you want to use in the game like board, counters, dice, cards, etc.

★ Then frame the rules of the game.

★ Give an interesting name to your game.

Here are some examples of board games that can be made to learn social studies:

Game 1: This game is based on Bhed-Bakri, an ancient game from India. In this game, the board is prepared as shown in Fig. 1.

Objective of the game: To reach the opponent's starting point.

Elements of the game: Board, dice or cowries, two counters of different colours – one for each player.

Mechanics: The player throws the dice and moves his counters.

Rules: The player can start moving his counter only after he gets a six on the dice. The direction of the movement of Player A is shown with arrows in the layout below. He wins if he is able to reach Player B's starting point. Player B also takes his turn in throwing the dice and moves his counter from his starting point till he reaches Player A's starting point. If a player's counter reaches the same square as the other player's counter then the player who was already there has to take his counter back to his own starting point.

Now let us connect this game with social studies. Some of the squares can have questions from the

subject. The player has to answer the question in the square correctly to move forward. If he is not able to answer correctly then he moves one square back and his opponent gets the chance to throw the dice. Instead of dice, four cowries can also be used. The player throws the cowries. He moves his counter as many squares as the cowries with their opening side up. If all cowries fall with the opening side down then it is counted as eight. The number of rows, columns, and questions can be increased as per your choice.

→	↓	**Start for B/ End for A**
What is a book of maps called?		Which ancient civilization existed on the banks of the river Tigris?
↑	Name the world's longest river.	
Who is the chief minister of Gujarat?		↑
	↓	Who discovered the ruins of Harappa?
	Who is the head of the municipal corporation?	
What is the capital of Australia?		
	↑	Which is the world's highest peak?
Start for A/ End for B	→	↑

Fig. 1

Game 2: On a board, draw and colour the layout of Snakes and Ladders. In the squares at the base of each ladder and the mouth of the snakes write a question from history, geography, civics, or economics. The rules remain the same as for Snakes and Ladders, except when the player reaches a ladder he can climb it only if he answers the question asked correctly. If he reaches the mouth of a snake and answers the question given correctly, he can

remain in the same square but will have to go down the snake if he answers incorrectly. Questions can be based on countries and their capitals, states and their capitals, wildlife and vegetation, etc.

Game 3: For this game a board similar to that of Ludo can be prepared.

Objective: To move forward on the board and reach the home in the centre.

Components: Board similar to Ludo, dice, four counters of different colours – one for each player.

Rules: All four players throw the dice. The player with the highest number on the dice has to speak for one minute without pause, hesitation, repetition, or deviation on a topic related to social studies. It can be about a country, state, continent, city, historical personality, climate, pollution, etc. A single theme can also be decided for all players in advance like 'Travel'. If the player succeeds in speaking for one minute then he moves five places forward, otherwise he goes two steps back. The first player to reach home is the winner.

Game 4: Scrabble can be linked with social studies. Distribute the letter counters equally among the players. All rules for playing scrabble are followed. But in this game the players will make only names of countries, continents, cities, towns, villages, or states.

Game 5: Make a set of 50 cards with names of different countries written on them. Then make another set of 50 cards with the capitals of these countries. Shuffle the set of 100. Two or more players can play this game. Each player is given 10 cards. All the players first make sets of countries and their

capitals from the cards they already have and put them down. Then one player opens a card in the centre. If it has the name of a country then another player who has the card with its capital will throw his card, make the set and add to his other sets. If the opened card has the name of the capital then another player who has its country can make the set. The game continues and the player with the maximum number of sets wins.

Game 6: Make a board with a grid as shown in Fig. 2. Each square should have the name of a country. Each player gets 10 cards (as shown in Fig. 3) with one picture/name of a thing associated with these countries drawn/written on it. It can be monuments, food, clothes, flora, fauna, famous people, national symbols (flag, animal, bird, flower, vegetable, fruit, etc). The first player to play selects a card and places it on the board in the box of the country with which it is most associated. He gets five points if he has matched correctly. It is then the next player's turn and he too puts down his card on the country with which it is most associated. The player who scores the highest is the winner. This game can also be made with the states of a country.

Africa	Australia	India	Canada	USA	Sri Lanka
Bhutan	Nepal	Egypt	France	Germany	Argentina
Bangladesh	Brazil	Denmark	Greece	Iceland	New Zealand
Indonesia	Italy	Japan	Kenya	Maldives	Mauritius
Mexico	Norway	Phillipines	Spain	Switzerland	Sweden
Zambia	United Kingdom	Turkey	Thailand	Peru	Portugal

Fig. 2

Cut the squares in Fig. 3 along the lines to make individual cards which can be placed on the countries on the board. Make many cards with different things for each country.

River Amazon	Capital: Port Louis	Currency: Yen	Artesian wells	The Pyramids
Currency: Baht	Dolphin	Statue of Unity	River Thames	Madonna
Cherry Blossom	Pizza	River Nile	Capital: Washington DC	Hollywood
Lion	Peacock	Currency: Peso	Ayer's Rock	Largest producer of coffee in the world
Lotus	Ottawa	Eiffel Tower	Capital; Ankara	National Game; Archery

Fig. 3

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Do you believe education can regenerate society?

Surely, education has no meaning unless it helps you understand the vast expanse of life with all its subtleties, its extraordinary beauty, its sorrows and joys.

~ J Krishnamurti

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EFFECTIVE FEEDBACK

Nuturing feedback literacy

Approaching with empathy

Offering corrective feedback

Allow time

Provide behavior specific feedback.

Illustrations: Niveditha Narendran

How can I help

Providing effective

Lamia Bagasrawala

In schools, feedback is commonly offered and received at various levels. Teachers are often responsible for providing feedback to students and in return students' performance is perceived as a reflection of the teacher's skill and efforts. Recently, schools have started inviting students to provide anonymous feedback to assess teachers' performance. More formally, teachers receive feedback from heads of their departments, and in some instances, the school principal. Many schools also encourage peer feedback between teachers as well as student groups. Despite its common use, there is rarely any formal training or coaching in providing feedback within school systems. This article presents a brief conceptual overview of feedback, its critical role in school systems, and offers some recommendations for various individuals within the school system while providing feedback.

In education, feedback is often defined with the student as the recipient. It is seen as "information given to students about their performance that guides their future behavior" (Ambrose et al., 2010). The key feature of feedback, according to this definition, is that it is a pathway to direct a student's future performance, academically, behaviourally, or across other domains. Feedback is therefore seen as a mechanism to promote and sustain learning (Bransford et al., 2000). In a meta-analysis that synthesized over 800 meta-analyses of 138 factors that influence student achievement, Hattie (2009) found that feedback was one of the top 10. However, the study also found that the type of feedback provided impacted the strength of the relationship between feedback and student achievement. This implies that not all feedback is equally effective.

Feedback is effective when the recipient, be it students or teachers, have opportunities to implement it and engage in goal directed behaviour that demonstrates the desired improvement. As Ambrose et al. (2010) emphasize, feedback is interconnected with practice and performance. Sadler (1989) in his seminal work on feedback and assessment identified three conditions that are essential for effective feedback:

you improve?
feedback in schools

the learner or recipient must know what the expected standard is, they must identify the *gap* between where they are and the expectation, and they must know how to close that gap. Feedback is therefore not only aimed at identifying what is lacking, but also guiding the recipient towards meeting the desired goal. As Susan Ambrose, Vice Provost of Teaching and Learning and Professor of Education, aptly writes in one of her co-authored books titled, *How Learning Works: Seven Research-based Principles for Smart Teaching*, feedback is not devoid of an evaluation and effective feedback tells students "what they are or are not understanding, where their performance is going well or poorly, and how they should direct their subsequent efforts" (Ambrose et al., 2010). Simply put, as Hattie (2011) mentions, the role of feedback is to help the recipient address three fundamental questions: where am I going, how am I going, and where to next.

However, delivering feedback that is evaluative is not easy. In schools, principals and leaders hesitate and avoid giving negative feedback, a practice that has been widely documented as the "mum" effect (Tesser & Rosen, 1975). This reluctance to provide negative feedback often results from the experience of contradicting feelings of anger (that the teacher has not performed well) and compassion (awareness of the teacher's capabilities and their context) towards the teacher (Yariv, 2006). In practice, leaders and teachers then rely on the feedback sandwich method that suggests providing positive comments or feedback before and after a negative comment. However, more recently, evidence suggests that this approach may not always be effective. Although much of the writing in this area is within the field of organizational behaviour, it is as relevant to schools which are systems directed towards a common goal of student-centric learning. It appears that with the sandwich method, many students and teachers begin to anticipate negative feedback whenever they receive positive comments, almost as if 'waiting for the other shoe to drop' (Daniels, 2009). This creates a lot of anxiety and makes the process of receiving feedback very monotonous. In many instances, it

also minimizes or nullifies the impact of the positive feedback which gets perceived as merely a buffer, as something that is used to absorb the unpleasantness of the negative feedback. The worth of the positive feedback diminishes, which can negatively impact student and teacher motivation to improve. This is counterproductive to the primary goal of feedback and leads us to an important question: How can we provide constructive feedback in schools?

Systems-level feedback mechanisms
Providing and receiving feedback is a skill-based process. It not only requires thoughtful engagement from the individual/s providing feedback, but also an appropriate environment that facilitates this process. In schools and educational settings, it is important to start by asking the following questions: a) What is the culture of feedback in the school? b) What opportunities are available to students, teachers, and school leaders to provide feedback? c) In what ways are individuals in the school coached to provide and receive feedback? d) How are feedback mechanisms monitored and evaluated?

A culture of feedback refers to an environment that values and encourages effective feedback. It involves creating pathways and mechanisms for systematic feedback. For instance, while many schools use student performance as an indicator to evaluate teachers, many others rely on anecdotal feedback received from students, administrators, or parents, which is irregular and random. Instead, a culture of feedback provides opportunities for teachers to receive feedback from their peers, students, and administrators in a more consistent, meaningful, and structured way (Hall, 2013). A school that values the role of feedback also provides formal channels for students, teachers, and staff to receive feedback from each other. There is a common understanding about the role of feedback and the types of feedback that the school encourages. Additionally, students, teachers, and administrators are considered as partners in the feedback process. They must be coached not only in providing feedback but also in receiving and reflecting upon the feedback. Lastly, difficult conversations or negative feedback may result in desired improvements but may also lead to unintended consequences. As a school, it is important to identify ways to evaluate the feedback process and offer alternative feedback mechanisms.

Before we get into specific strategies that can facilitate the process of delivering negative or difficult feedback, there are some features that characterize effective feedback. Research indicates that staff and students value feedback when it is, a) offered in a simple language that is easy to understand, b) is specific to

a particular aspect of performance, c) provided in a timely manner to ensure that it improves future performance, d) contextualized and takes into account the individual's goals of learning, and e) personalized and refers to the individual's previous performance/work and what is known about the individual, including their strengths (Nicol, 2010). These underlying factors can make critical feedback more acceptable and recipients are more likely to act on it.

Recommendations to provide effective feedback

In addition to developing systemic channels for feedback, adopting certain communication styles and developing skills to provide feedback that is actionable, timely, and specific can facilitate the process of constructive feedback. Referring to Sadler's three conditions noted earlier, effective feedback depends as much on the skills of the individual providing feedback, as much as the awareness and knowledge of the individual receiving the feedback. In his book chapter titled 'Opening up feedback', Sadler (2013) illustrates how feedback from an external source leads to improvement when the recipient has prerequisite knowledge about that area of performance. In other words, feedback must be situated within what Vygotsky referred to as one's 'zone of proximal development'. Negative feedback or difficult comments must therefore be developmentally appropriate and build on the individual's preexisting knowledge. Let us imagine a scenario where a middle-school coordinator provides negative feedback to a teacher about their teaching skills. The feedback comes as a reactive measure since the teacher's class which has students with diverse abilities and needs, has performed poorly in math. As part of the constructive feedback, the teacher is asked to plan activities that can facilitate successful outcomes

for *all* students. However, if the teacher is not acquainted with differentiated instructional strategies, the feedback may seem too overwhelming. It is not unlikely for the teacher in this scenario to dismiss the feedback citing the administrator's lack of experience in managing a class of students with diverse needs. The process of delivering negative or constructive feedback must therefore be contextually relevant and central to the recipient's growth. Some strategies to facilitate this process are discussed below.

Nurturing feedback literacy: Although not part of the feedback giving process, this is an important step that prepares individuals to receive feedback. Feedback literacy involves intentional efforts taken to develop an individual's ability to work with feedback and act on it confidently (Carless & Boud, 2018). This can be facilitated through regular conversations that help students, teachers, and staff appreciate the role of critical feedback. This also includes deliberate efforts to challenge the idea that negative feedback or criticism is reflective of failure. Such school-wide conversations create a foundation for effective feedback. Feedback literacy efforts will also include skill development for all individuals on identifying the "gap" between one's performance and the expectations. This is what Sadler refers to as the 'knowing to' skill or the ability to know when one's work or performance is not how it should be. This can be done through regular use of self-assessment techniques and rubrics that encourage individuals to evaluate their performance. Additionally, teachers

WHY FEEDBACK EXCHANGE IS IMPORTANT

and students must also receive coaching on regulating their emotions in the face of difficult feedback. This can be facilitated during teacher reflection meetings, or social-emotional learning classes for students. Feedback literacy is important to ensure that individuals within the school are adept at responding to and utilizing critical feedback.

Approaching with empathy: Creating a culture where critical feedback is acceptable does not make the experience of receiving criticism pleasant or easy. Negative feedback must be delivered with an intention of support and growth. Research shows that negative feedback delivered with empathic concern is better received and recipients are more likely to experience positive emotions despite the criticism (Young et al., 2017). In educational settings, approaching teachers and students with an empathic lens is important for the feedback to be impactful. Empathy can be reflected in one's tone and non-verbal behaviours while delivering the feedback. One important aspect of empathy is reflecting on one's own socio-cultural position and privileges. For instance, teachers and staff can be encouraged to reflect on how their identities, such as caste, class, educational status, leadership position, etc., influence their assumptions, biases, and possibly the feedback too. Bell (2022) provides the following questions which administrators and teachers can reflect upon before they provide feedback: "Will the teacher perceive the feedback you are conveying to be helpful or harmful? Will they believe that you are committed to supporting them throughout the growth process, or are you too focused on documenting the problem?"

Offering corrective feedback: Liebold & Shwartz (2015) provided a framework for types of feedback that can be provided online. This framework can be a useful tool to use offline in schools too. Drawing from this framework, feedback can be corrective, suggestive, or epistemic, but not punitive. Negative feedback and criticism are often misperceived as a replacement for punitive action, as a negative consequence for a wrongful action or behaviour. However, when phrased as corrective feedback, the feedback creates an opportunity for the teacher or student to reflect on their current performance and identify ways for improvement. For instance, the following feedback, "Your teaching is not up to the mark. You need to work more on clearing students' doubts," can be rephrased as, "You seem to address students' questions after class and give feedback on their exam notes. However, you do not proactively create opportunities for them to share doubts or concerns during class. How can you address this gap?" Similarly, suggestive feedback offers suggestions

to the recipient to improve their work instead of only identifying the problem area. And lastly, epistemic feedback encourages the recipient to think more deeply about the current challenge, thereby making the feedback process a "partnership" (McKeachie, 2011).

Provide behaviour specific feedback: Phrasing negative feedback in a way that targets specific behaviour is critical in facilitating goal-directed performance for students and teachers. Recent research shows that when constructive negative feedback is explicit in identifying the problem as compared to ambiguous comments that communicate disapproval, students are more likely to evaluate their performance against the expectation, and act on the feedback (Pankonin & Myers, 2017). For instance, phrasing feedback that is directed towards the teacher's specific pedagogical practice is more effective as compared to vaguely talking about the teacher's overall teaching. To assist in this process, school leaders and administrators must gather data from different sources including observations, interviews and feedback from students and other teachers, and reviewing the teacher's self-evaluation. Feedback must be based on the triangulation of data from multiple sources, collected by using multiple methods.

Allow time: Receiving critical feedback is a difficult process which can become even harder depending on the individual's context. For instance, a student could be experiencing a depressive episode, or a teacher could be grieving the loss of a family member at the time of receiving feedback. While we may not always be able to time our feedback appropriately, allowing time before, during, and after feedback is critical to ensure that the feedback is acknowledged and useful. Before the feedback is provided, teachers or students can be given time to reflect on their performance and conduct a self-review (Bell, 2022). During the feedback, it is important to take time to acknowledge the emotional content during the process. Often, the emotional discomfort leads leaders and teachers to jump into positive feedback. Instead, check-in with the student or the teacher and acknowledge that the conversation is difficult. For example, it may be appropriate to say, "I know that this feedback is not all positive and it can be overwhelming. I'm just going to give us a few minutes to reflect on this. We can talk about how you feel about this if you like." And lastly, allow time after the feedback is provided for the teacher or student to follow-up. Inform them that you are available if questions arise later, or if they have any concerns about the feedback that they would like to discuss at a later point.

The recommendations discussed above can be incorporated at an individual level, if you are a teacher or an administrator in a position to provide feedback, and they can also be used at a systemic level in the form of a guideline that schools can create on providing and receiving feedback. These guidelines can be introduced during professional development programs, as part of professional learning communities, or student orientations. Having said that, at the crux of this entire conversation is the idea that critical feedback is essential for the recipient and therefore, if you're in a position to offer feedback, ask yourself, "How can I help them improve?"

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Pedagogical

Anubhuti: Students learn many things from home and families and come into class with preconceived notions. They disagree with each other and we teachers have to deliver judgment on who is right and who is wrong. How do we do this and ensure children and their families do not hate us?

I was teaching the history of the caste system and explaining ways in which caste oppression played out. One student said his parents told him that untouchability is wrong and is no longer practiced in India. He said caste is practiced only in rural, backward areas where people are uneducated. He went on to say that his house-help was *"lower caste"* and even then his parents were so nice to them.

Another student was visibly offended hearing this and screamed, "How dare you call people *'lower'* caste!" He said calling people *lower* or *upper* was proof that his parents were casteist. He was fuming in anger and had tears in his eyes. I had to intervene, and to calm him down said I agree it was a mistake to use the term and advised the first student that rather than *upper* or *lower*, we should say *different*. I explained how development and education helped rid our society of regressive practices.

I am glad I dealt with it as an issue of language and calmed the situation. I am still wondering why this student was so agitated and angry. Our class is quite caste neutral and the first student was being nice and sharing something important that he had learnt. Now the other student hates me thinking I am taking the wrong side. I need to work some more to make students unemotional and focus on cognitive learning in class.

Ira: But Anubhuti, is it possible to reduce complex social issues like this to merely cognitive? They are bound to cause agitation and even trauma. Maybe the child was agitated because he related the class to his and his parents' life experiences, and possibly has different learnings about caste than the first child. How do we know he did not experience extreme discrimination and the use of the term *'lower caste'* reminded him of all that. You should have encouraged him to speak more rather than shut his learnings out.

neutrality and conflicts in the classroom

Prakash Iyer

Maybe others would have learnt some more about caste discrimination.

Sorry, but changing the word to *different* can itself be construed as casteism! The word, *different*, unless explained, could still contain a sense of hierarchy, which is inherent in the term *'caste'*.

Anubhuti: You mean my students will think I am casteist? The first student was not discriminating against his classmate. He was stating what he had learnt from his experiences at home and his parents. I believe they were doing something good and it was worth mentioning in class. It gave me the chance to convert this disagreement into a learning opportunity for everyone. I was able to explain how education helps get rid of abhorrent practices like casteism. If people spoke more about continuing caste atrocities, we would lose the possibility of being hopeful.

Moreover we might end up categorizing the students into oppressors and oppressed. That would be worse!

Ira: See you are struggling to use an alternative to *different*. But seriously, do you really believe caste is not practiced by educated people? Take untouchability, for example. I know many people who have separate vessels for their house-help. They drink tea made by the house-help in exotic, expensive crockery, but the house-help are expected to drink tea in steel glasses kept separately for them. Isn't this untouchability? Wouldn't you feel insulted if you were given food in different plates?

Children learn from all this. In school, they may learn not to engage in extreme forms of caste atrocities, but they could learn subtler ways of casteism from their experiences at home. Unless we make that connection with their realities they will not really learn much about caste, except for the meaning of the term.

Anubhuti: But I am teaching history, which is about the past. I do agree terrible practices like untouchability and casteism were prevalent in India, and learning about the past will ensure they know history well enough not to repeat it. My job is to create a stable, ideal environment in the class so that everyone learns our common history.

As for contemporary times, we have civics in which we teach the constitution. The constitution does provide ample laws to ensure that discrimination based on caste or caste atrocities do not happen. The first step is to make the next generation aware of these laws. Any more details should be left to the civics teacher; that is not in the history syllabus.
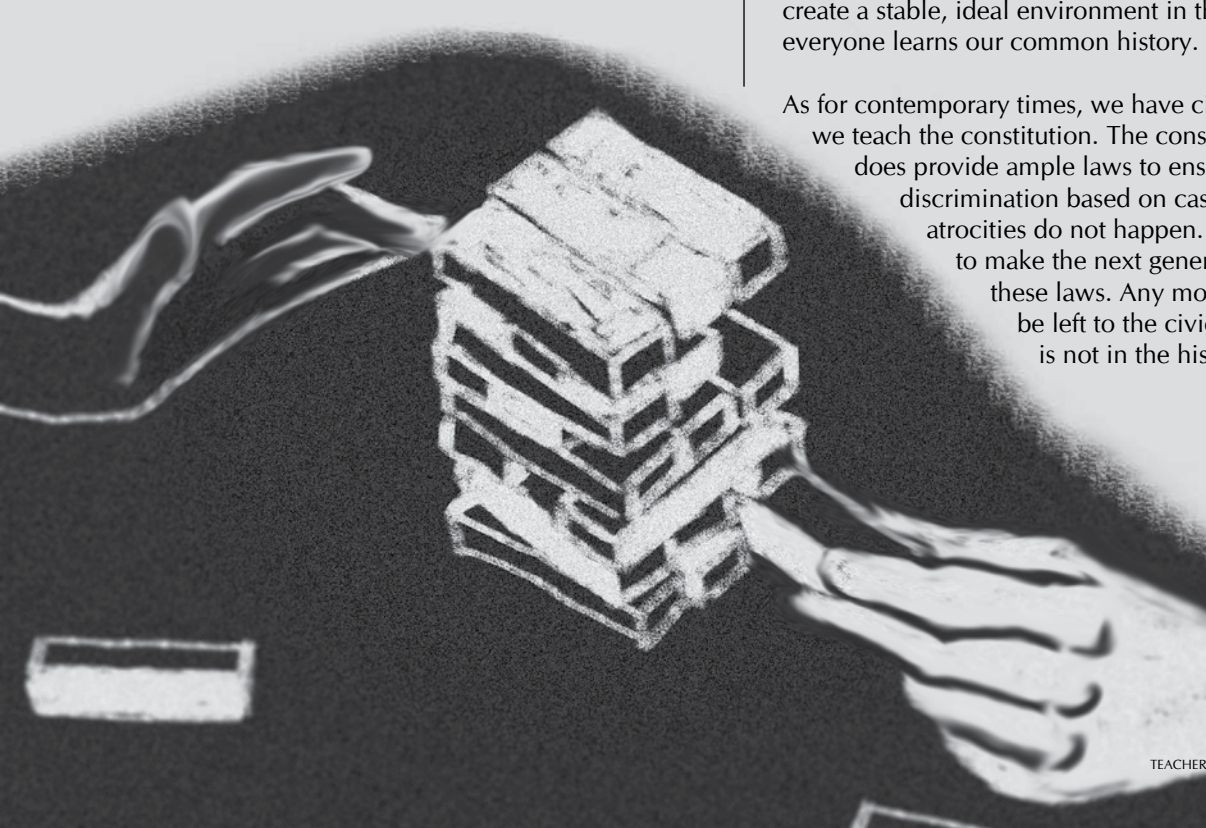
Illustrations: Shilpy Lather

Amrita: Sorry to interrupt, but I am concerned with this limited understanding of history education. We are who we are today because of our pasts and our contemporary realities are a continuation from the past. In this sense, history education contributes to our identity. This identity is not only a common political (national) identity but also our identities as individuals and parts of communities that have been and are part of the larger society we live in. Our identity as citizens of the country is informed by our knowledge of the nation's common history. Whereas, we identify ourselves as part of a community by learning the history of the community and place of the community in the nation's history. We should not only be teaching the common national history, but also the particular histories of all religions, language, and communities based on caste.

The way we narrate the history of the nation and its constituent communities, determines what each person thinks of themselves. For instance, if you remove caste from the syllabus, you are removing numerous differences between people that exist even today – even though we are all Indians. If we emphasize the common past and do not do justice to the pasts of individual groups, we are insisting that everyone agree to one identity and consider their individual identities as less important. The student in your class must have been feeling the same – as if you are denying his caste identity and the injustices on the people of his caste.

Imagine what would the *dalit* population feel if we did not include Jyotiba Phule, Ambedkar in the syllabus, and only kept Rammohan Roy, Ishwarchandra Vidyasagar, Dayanand Saraswati (all three fought against the caste system). It would pass the message that dalits were not capable of reforming themselves, and they needed upper caste reformers to do that for them.

History syllabus should be concerned with representation in the common narrative. History is a critical part of citizenship education. That is not the job of civics alone. Anyway, the syllabus is a distinction we make, but learning is integrated in the learner's mind.

Ira: But Amrita, there is merit in Anubhuti's argument of creating a safe space in class by removing all contemporary references to caste. Doing that would bring in the kind of conflicts she was talking about. Moreover would we want to classify students as being part of oppressive groups and the oppressed within the classroom! That would be dangerous don't you think?

I think too that students would have learnt contradictory things from their parents and communities. But keeping the class insular to these contradictions will actually help develop a clear and ideal picture of the nation we want – rather than

Past ———————— Today ——— Future ———
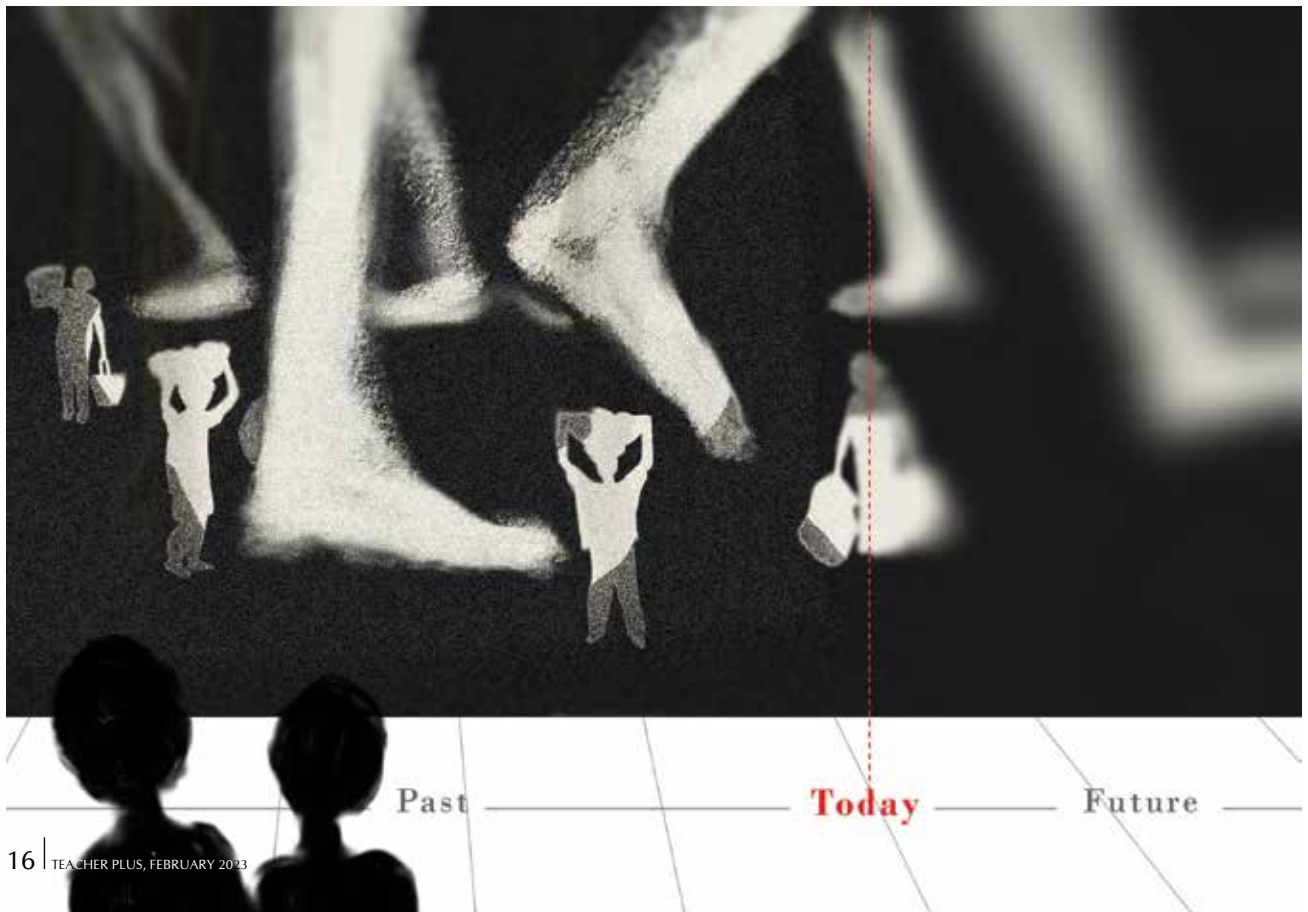
delving into the problems that make our society seem terrible to live in.

Amrita: Don't you see problems with your recommendation? You are hiding children from the realities outside, which are a continuation from the past. We are morally wrong if we brush past atrocities under the carpet and only provide an imagination of a beautiful country we want to build. If we do that the syllabus itself becomes a tool of injustice.

Moreover if I teach that caste discrimination is wrong only because it is illegal, won't I be doing injustice to civics education? It is a moral issue, not only a question of obeying or disobeying rules.

In history, we can create multiple narratives from the same set of events. We can downplay some events and emphasize others. For e.g., there is a reason why our history textbooks focus a lot on the Bhakti movement, social reform, and the freedom struggle. These are critical junctures in our common history that provide an idea of an inclusive, tolerant, and syncretic nation; and as means to pose Kabir, Basava, Ambedkar and Phule as ideals to follow and emphasize that caste discrimination is evil.

Ira: I agree that we can create different narratives of a common history. By your own argument, we can emphasize the times when caste was only a means of classification of occupations, which later transformed into hierarchy and stratification. This happened mainly when the British identified backward caste, tribes, and communities in order to ensure they are included in the mainstream. Why don't we create this narrative which is safe and idealistic and equates us with most other civilizations where caste does not exist?

Anubhuti: Tagore said this very thing in his speeches on nationalism. The problem with this narrative is that caste was a means of classification of occupations in a very distant past, possibly thousands of years back. We have no means to categorically say when or how the caste system transformed society into a stratified one, making communities mutually exclusive. We can surely say that we have been like this for centuries now, and this casteist thinking is so deeply embedded in our reality that saying this does not exist would be akin to a dream...a fantasy! We can learn from our past and not repeat it, but we cannot wish it away completely.

Amrita: I agree, we cannot wish away the present either when caste atrocities are so prevalent. That is why the Constituent Assembly dealt with it so

intelligently. Most of us teachers fail to see that caste reservations are not only to distribute schooling and jobs. The reservation system is based on the principle of equal opportunity and more importantly equal representation. We need people from diverse backgrounds and identities in all public spaces. This would help change even the notion of merit or good learning.

It is essential, even critical, for our classes to have students from different caste, class, gender, and even religions. That will bring in plural identities and the need for multiple historical narratives like it did in your class today. You should have helped the child bring his learning also into the class; other children would have benefited from it.

Of course it is difficult to bring disturbing emotions into the class, but learning is an emotional endeavour too – especially social science. We cannot and should not reduce social science to a cognitive exercise. Our job is to help develop the right dispositions and contribute to the formation of social and political identities.

Anubhuti: This makes teaching history more complex than I thought. I thought it was developing an interesting narrative of the past and making students aware of how societies change. I did not realize the implications of the historical narrative. It is necessary for me to bring the multiplicity of pasts into the class and connect them explicitly to the identities children in class inhabit. The normative aspect of history – formation of political identity – is closely connected with civics and political education.

It is scary for me to bring such fundamental conflicts into the classroom. I realize that I was running away because of my own fears and being a bad history teacher. I was too keen to be pedagogically neutral, but in situations like this, neutrality amounts to escapism.

I should externalize the concept of caste and teach it as a social structure that creates oppression, rather than naming communities as oppressors. That way students will be learners of social structures and locate their own identities in this larger structure.

We have to rediscover our many pasts through the lens of the principle of equality.

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The emoji

Neerja Singh

What does the rise of the emojis say about the English language? That it is not able to fully capture the depth and complexity of our thoughts. We therefore incorporate emojis into our communication to better express ourselves. They are, after all, the alternative to physical cues. The graphic figures make it possible to express a broader range of feelings other than the non-committal "I am fine". Emojis save us time while enriching our interactions. When tired, for instance, just a bunch of hearts, smiling faces, and flowers work instead of words. The recipient gets what is meant. In those few seconds while selecting an emoji to express a feeling, there also occurs a moment of reflection.

But then, amidst all the flurry of this graphic connection, who would have anticipated a generational difference over the smiley emoji? It appears that the graphic no longer indicates mere friendliness. In fact, the young view it as dismissive, even sarcastic, and passive aggressive. It is clearly time to stay a step ahead and get an education on the new meanings some of the popular emojis signify.

Take the cry-laughing face. Until now, it conjured up images of someone rolling on the floor with laughter but gen-next has found a replacement, viz., skull and crossbones. The thumbs up no longer means fine, or great, or no-problem. It is going out of fashion and being considered ancient vocabulary.

The red love heart has been replaced with flames of fire. So, there you have it! Emojis are a great and fun way to connect with each other, but they can also be an intergenerational and cultural minefield, particularly when every generation presents a distinct culture today. In other words, one person's friendliness can end up being another person's offense, when an emoji is misinterpreted!

The teens are giving emojis meanings no one anticipated. For instance, when the emoji that features two hands pressed together is sent, does it send a message of gratitude? A request for a favour? Or is it hands clasped in prayer? And is the emoji with the smiling face and two hands signalling a friendly wave "hello", or giving a hug, or is it a "high five"? The adults today are perhaps best-off avoiding use of the emoji they are unsure about. It is safer to stick with something that is more straightforward and less open to misinterpretation.

The use of emojis has evolved progressively. An Emojipedia analysis (https://emojipedia.org/stats/) says that nearly one in five tweets now contain at least one emoji. There is nothing inherent in the symbols, and like words, their meanings emerge to relate to how people within a community use them. At times, the meaning may be based on a visual metaphor, other times it will replicate something in verbal language, and it might well copy verbal slang literally, such as a single flame for the word 'lit'. Philip Seargeant, author of the book *The Emoji Revolution* writes, "It will start with one particular community who starts a trend, and then this gets picked up by other groups, until it spreads wider and wider. And if it gets picked up in the media, or by someone with a large number of followers, it spreads that much further and more quickly".

Historically though innovations in language spring most strongly from the young, to be then picked up across generations. Gen Z (born 1997-2012) has made emojis both ubiquitous as well as niche. A live streaming

war

platform for gamers like Twitch, boasts of hundreds and thousands of custom-emotes that all have different meanings. On the gaming and chatting app called Discord, you can make your own emojis. We are clearly entering an era of ultra-niche emoji use online, which is refreshing, but also very confusing. And in this brave new world, Gen Z's emoji use is feisty, more ironic, and nuanced.

For instance, "No ♡", spread via TikTok communities like wildfire in the year gone by. It falls under a specific category of internet communication that is gathering fame on both TikTok and Twitter: fairy comments. This language kills with kindness. The comments start off cute and wholesome, and then take a sharp, shocking turn to become dark, ironic, and often insulting. Indian teens have lately used extremely sarcastic sentences with soft emojis such as butterflies and sparkles and hearts to unleash their wrath around issues they feel strongly about. Just as tastes in fashion and music, the popularity of emojis reflects a community trend that comes and goes. Cat emojis that were huge some years ago are today out of the new generation's collective favour.

The young on social media stray further and further away from their English language teachers! Standard punctuation and spelling get the short shrift in favour of not just convenience but for reasons that are sometimes unfathomable. Have you heard of a comma ellipsis? It goes like, "Hope you have a Happy New Year,,,," Well, the older generations have had a habit of peppering their writing with regular ellipses. Take this phrase, "We should meet soon…" Young people read the trail of three ellipses as ominous. It conveys a foreboding. Something unsaid, unclear and couched, open to interpretations. The comma ellipsis likely evolved as a direct response to the period ellipsis. It allowed for a more emotional, attention gathering and comedic reading. They can either be saying "I'm trailing off because I'm upset!" or "I'm trailing off or pausing but also I'm joking!" The young use informal writing to convey tone.

Texting is the primary way for Gen Z to communicate with friends and family. No wonder it matters to them that their emojis are interpreted correctly. This largest generation on the planet is known to constantly update their online lexicon. That little harmless looking graphic can lead to a lot of confusion. I remember my daughter sending me a black heart once and the debate we had thereafter on what it meant. Did it convey sadness? Was it a symbol of love and affection? Or was she simply sharing how black lives mattered to her?

To function well in the remote and digital spaces we increasingly inhabit, it is important to understand how to use emojis in a contemporary and relevant manner.

Now did you know that removing your WhatsApp display picture (DP) is seen as an attempt to seek attention?

The author is a former teacher/journalist, published author and professional speaker on generational diversity with a background and training in media, having worked in advertising, public relations, documentary film making, and feature journalism. She is a TEDx speaker and represents the Professional Speakers Association of India on the Global Speakers Federation Board. She can be reached at <https://www.linkedin.com/in/neerja-singh/>.

Elizabeth Garrett Anderson

Path-breaking Victorian

Mamata Pandya

February 11 is International Day of Women and Girls in Science. In order to achieve full and equal access to and participation in science for women and girls, and further achieve gender equality and the empowerment of women and girls, the United Nations General Assembly declared 11 February as the International Day of Women and Girls in Science in 2015. *Teacher Plus* would like to celebrate this day and the many women in science by bringing you this monthly column.

This column will carry stories of women who have been pioneers or forerunners in different areas of STEM. They are stories of women from different parts of the world, in different time periods, with one thing in common: they achieved what they did in the face of numerous challenging circumstances, in times when the role of women in society was perceived very differently. Thus their professional achievements also signified important steps in the struggle for women's rights. These are not just narratives of the scientific breakthroughs, but stories with a human interest angle. We hope that these inspire and evoke admiration from all readers and open new windows for the young generation of women who will themselves be exploring hitherto unexplored frontiers and scaling new heights.

The passing away of Queen Elizabeth II in September 2022 marked the end of the rule of the longest reigning monarch of Great Britain. The closest to her record was the rule of Queen Victoria who reigned for 64 years in a period that became known as the Victorian Era.

While the reign of Queen Victoria was an extended period of peace, prosperity, progress, and essential social reforms for Britain, it was also characterized by widespread poverty, injustice, and social discrimination. There was a very strictly defined 'class system' that determined every aspect of social life.

There was also a very strong perception (and application) of gender roles. A woman's place was clearly considered to be in the home, and domesticity and motherhood were considered by society to be a sufficient emotional fulfilment for females. Even upper class women who were educated to some degree by private tutors were not encouraged to use their minds in any way that would distract them from their assigned roles.

The rights that women enjoyed were similar to those that were enjoyed by young children whereby they were not allowed to vote, sue, or even own property. But these rights were to be questioned and changes demanded by a group of women who pioneered the suffrage movement. Among these was Elizabeth Garrett Anderson who broke many glass ceilings in her day.

Elizabeth Garrett was born on 9 June 1836 in Whitechapel, London, to Newson Garrett and his wife Louisa; the second of 12 children. Her father was originally a pawn broker who went on to become a successful businessman. The family moved to Aldeburgh in Suffolk when Elizabeth

Photo: Reginald Grenville Eves
Courtesy: www.wikipedia.org

was very young. As a child, Elizabeth got her basic education from her mother and a governess. When she was 13 she was sent to a private boarding school near London where she was taught languages and literature, but not the sciences and math. Unusual for the time, her parents encouraged their daughters to travel, explore, and pursue their ambitions. After completing school, Elizabeth, although engaged in domestic duties, continued to study Latin and mathematics with her brothers' tutors and read widely. It was accepted that like all the young women of her generation, Elizabeth would marry and devote herself to keeping house and tending her family.

When she was 22, a group of women published a magazine for women called *English Woman's Journal*. Among these women was one Emily Davies, who became a dear friend. She invited Elizabeth to hear a lecture given by Elizabeth Blackwell, the first American woman physician. Elizabeth was so inspired by her namesake and her lecture that she decided to become a doctor. A woman studying medicine was unheard of at that time. But her father was supportive. She was denied admission in any medical school, so she enrolled as a nursing student at Middlesex Hospital and attended classes intended for male doctors. She also employed a tutor to study anatomy and physiology. But after complaints from the other students, she was barred from the hospital; however Elizabeth continued to study on her own. She was determined to secure a qualifying diploma that could entitle her to put her name on the Medical Register. Unless a person's name was listed on the Medical Register, that person could not legally practice medicine in England.

Elizabeth found a loophole: she registered to pursue a degree of Licentiate of the Society of Apothecaries, which was at that time the main examining body for medicine in England. The Society did not specifically forbid women from taking their examinations. There was also no law preventing a woman from preparing and administering medications. In 1865 she passed their exams and gained the Licence of Apothecaries which permitted the holders to dispense physician's prescriptions. Elizabeth became the first woman in Britain qualified to do so. This was an unprecedented achievement; the Society subsequently changed its rules to prevent other women entering the profession this way.

Even though she now had a licence, Elizabeth still could not get a medical post in any hospital. With her father's financial backing, in 1866 she opened her own dispensary in London. A little later, towards her goal to establish a hospital for women staffed by women, Elizabeth set up St. Mary's Dispensary for Women and Children. Initially, people were reluctant to consult a female physician, but an outbreak of cholera saw patients teeming to her clinic.

It was during this period that Elizabeth was also getting engaged with the issue of women's rights. Her younger sister Millicent Fawcett was active in this growing movement; the two sisters with a group of like-minded women set up a discussion group that strongly influenced the battle for women's education and empowerment.

Although Elizabeth had already obtained many 'firsts' she was still determined to achieve her original dream of a formal degree in medicine. So she registered at the University of Paris from where she successfully earned her Doctor of Medicine degree in 1870. The British Medical Register refused to recognize her qualification.

Elizabeth Garrett Anderson Hospital

In 1870 Elizabeth became visiting medical officer for the East London Hospital for Children. In 1872 Elizabeth transformed the St Mary's Dispensary for Women and Children into the New Hospital for Women in London. The hospital specialized in women's health and all the staff were women. It was renamed the Elizabeth Garrett Anderson Hospital in 1918 and continued to appoint only female staff until the 1980s. Elizabeth also co-founded the London School of Medicine for Women, the first place in Britain specifically intended to train women as doctors.

In 1871 Elizabeth married businessman James Anderson in a wedding ceremony in which she did not take the 'vow of obedience'; she continued with her pioneering work even as she ran her own household and brought up three children.

Elizabeth's determination paved the way for other women. In 1876 an Act was passed permitting women to enter the medical profession and the Medical Register. Today over 48 per cent of licensed doctors in UK are women.

Elizabeth continued to lecture at the London School of Medicine for Women for 23 years and from 1883 she was also the School's dean. She was senior physician of the New Hospital for Women for 24 years. Elizabeth was the first and only female member of the British Medical Association for 19 years, and in 1896-97 she became president of the East Anglian branch of the British Medical Association. She also found time to write on medical topics, including a textbook for students.

In 1902, Elizabeth retired from her medical career and moved to the town of Aldeburgh in Suffolk. In 1908, at the age of 72, she became the mayor of Aldeburgh; she was the first woman mayor in England. In her final years, Elizabeth was a prominent member of the women's movement and campaigned for equal rights for women. Elizabeth Garrett Anderson died in Aldeburgh on 17 December 1917 at the age of 81, just two months before the Representation of People Act extended the right to vote to women over 30.

Elizabeth Garrett Anderson, with quiet determination and persistence, opened many doors, and paved the path that women take for granted today.

The author worked at the Centre for Environment Education in Ahmedabad for over three decades, where she was engaged in instructional design for educators and children. She is now an independent consultant, editor, writer, translator, storyteller and blogger. She can be reached at <mamata.pandya@gmail.com>.

The

Being an Individuals and Societies (I&S) educator is super exciting as no two days are similar. I am constantly on my toes when it comes to ideating about ways to empower learners. Most of the ideas that come to me come at the flick of a second. No matter how much I plan, I am an on-the-go educator. Although I have the basic framework of a lesson or unit planned, my tasks for the learners are usually unplanned and intuitive.

One such task that excited me was when my sixth graders were learning about the rock cycle and the types of rocks. The unit was on physical geography where we were inquiring into the ways physical geography informs us about the formation of the Earth. While
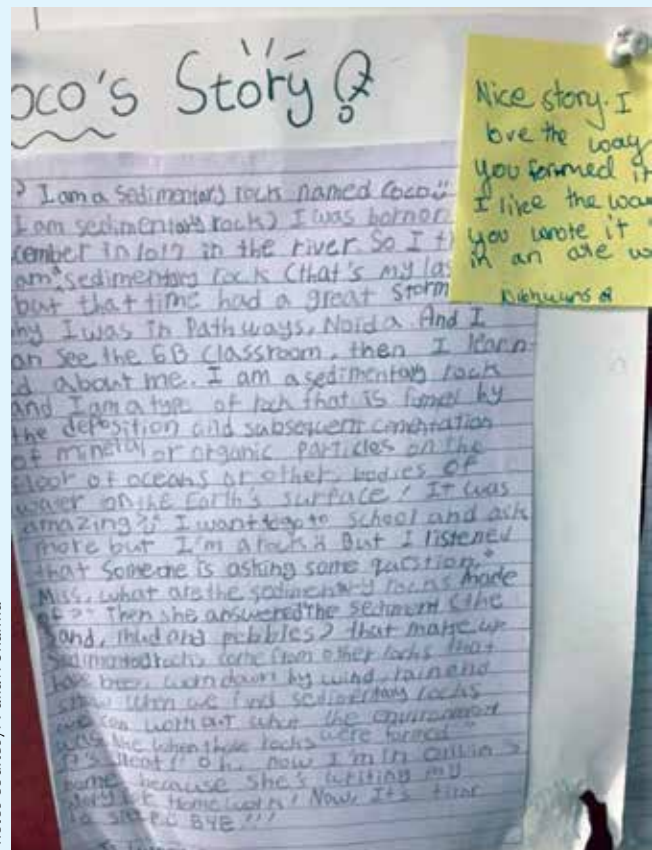
Photos courtesy: Pallavi Sharma

'rock'ing social sciences

Pallavi Sharma
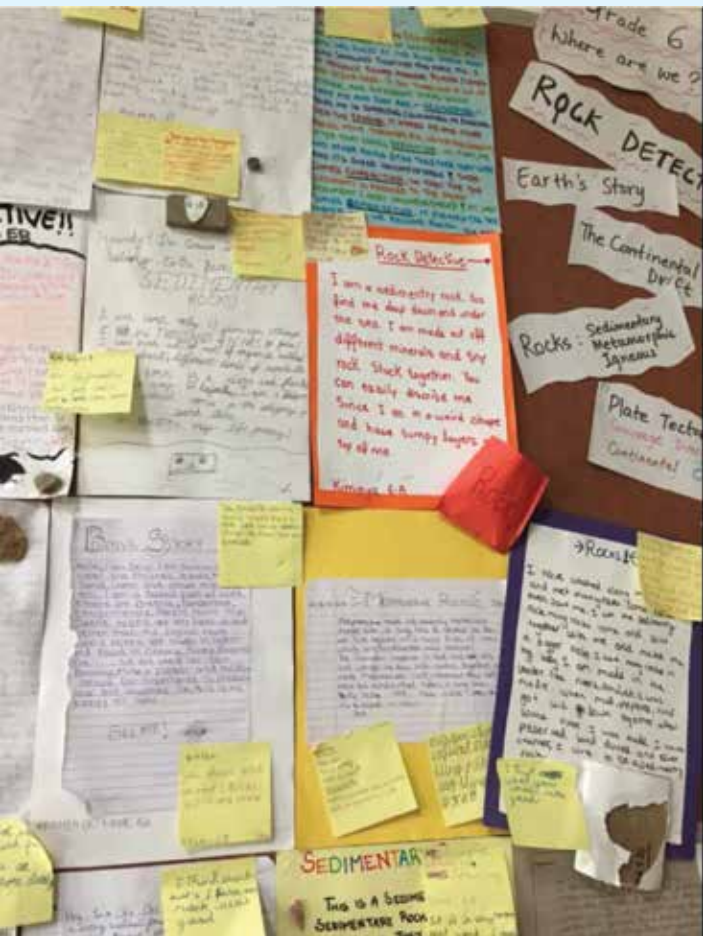
investigating the types of rocks – sedimentary, igneous, and metamorphic – we went out in search of rocks and collected as many different kinds as we could. We brought them all to the classroom and invited our senior geography educator to tell us about the ways in which we could identify the types. The learners were super excited, but I didn't want them to consolidate their learnings in the form of a report.

How else could my learners present what they understood from the lesson? Thus came the idea of – An autobiographical account of a rock! If the rock were to tell its story, what would it say? I roped in my colleague – an English educator – to take a class on writing an autobiographical account. And the results I got were astounding!

The autobiographical account was followed by a peer feedback session based on a simple rubric.

It didn't stop there; the impact of the task was such that learners kept collecting rocks wherever they went and brought back interestingly shaped ones to class. They would often research about the rocks on their own. They even gifted teachers with rocks with taglines such as: "You are a Rock-star", "Thank you for being the Rock of my life".

It was indeed humbling to see an "off-the-head" idea take shape like this. I decided not to grade the work but the students assessed their own understanding of the lesson against a checklist.

By sharing this experience, I want to urge educators to take risks, small or big, and enjoy the process of learning and unlearning as educators. It's worth trying!

The author is an International Baccalaureate (IB) Curriculum Coordinator, IBEN member, humanities facilitator and examiner with over a decade experience in education. She is also a teacher trainer, curriculum consultant, and education blogger seeking to create spaces of deep learning. She can be reached at <p.shr.rajaratnam@gmail.com>.

The infinite boundaries of zero

Azrabano Idrishi

Sneha came home crying, clasping her math test paper. Her sister Anu took the paper and scanned the circular outline; Sneha had scored a '0' in math. As Sneha waited for Anu to say something, she remembered how she had perspired and her heart had palpitated during the math test. Through her tears, Sneha said, "I did not study the formulas, I feel miserable for scoring 'nothing'...." Anu interrupted her saying everything in this universe is supposed to be something. Sneha did not agree; zero was invented to represent the absence of a digit. Anu said, "You might have to emphasize the fact that zero represents a value between +1 and -1, not to mention its undeniable position between any two digits that lets you decipher that 101 is one hundred and one and not really eleven". Sneha processed this.

Anu went on, "Earlier, zero was written using weird symbols, sometimes a blank space between numbers represented the zero, and sometimes stones were used, but the zero we now know as '0' has transformed and evolved from the earlier concept of mere absence. Did you know that zero was first seen in the form of a single dot in the manuscript called Bakhshali in ancient India?"

Sneha murmured, "It's odd that zero was identified in so many different ways."

"To add to the oddness, zero is considered to be an even number."

This really surprised Sneha.

Anu explained, "Any number that can be divided by two to create another whole number is even. When you divide 0 by 2, the answer is 0, which is a whole number, thereby proving that zero is even."

Anu's enthusiasm for the zero however did not rub off on Sneha, she said, "...no one desires a zero though."

"Ever heard of googleplex?" Anu asked.

"I assume that's where Google got its name from," said Sneha.

" Yes, but googleplex is also the number 10 raised to the power 10 which is then raised to the power 100, so many zeroes it is almost ridiculous. We can't write the number even if we used all the available writing material on Earth."

"All this does sound fantastic but what am I to do with this zero?" Sneha asked showing her test paper.

"You have to stand at the edge of the zero and see not its hollowness but its infiniteness. You put one pebble inside and you get 1, you put another and you get 2, just keep adding and counting," said Anu.

Anu went on to explain how the negative integers that do not physically exist were discovered with the help of zero. Anu assured Sneha, "You can definitely add to this zero and get the marks you desire."

Sneha felt assured. "Then probably in the next test that is two months away?"

"Oh! That's just 10 seconds away!" said Anu.

"That's probably some other fun math concept there!" Sneha said and Anu chuckled.

Reflecting on her sister, Anu decided that her next Ted talk would be about the anxiety associated with maths and the various teaching methodologies that could make math fun and not feared.

"Zero doesn't really mean absence, it is a value and you know what's good about values? They can be altered and so can your marks."
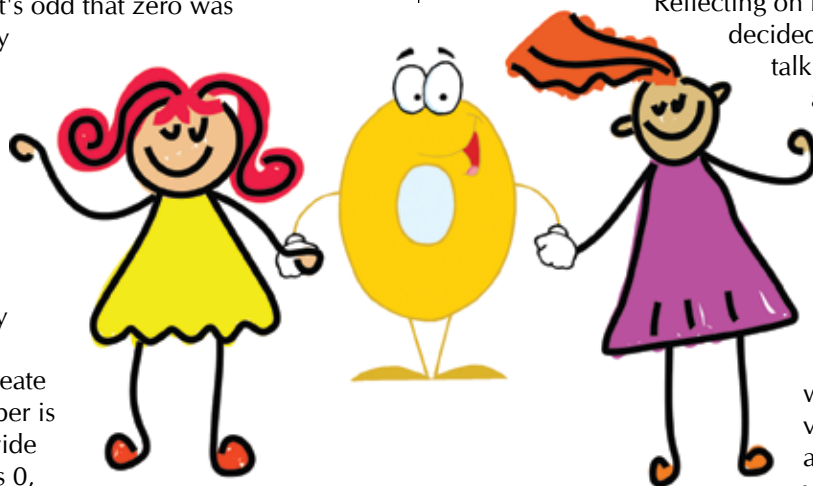
The author is a budding educator, currently pursuing her Bachelor's in Education from Somaiya College of Comprehensive Education, Mumbai. She can be reached at <azrabano.i@somaiya.edu>.

Elm-watching in Hyderabad

Venkata Tejah Balantrapu

For 10 years now, I have been watching and noticing the seasonal patterns of a tall and unassuming tree outside our apartment: an Indian elm. They can be inconspicuous. Interspersed between rows of copper-pods and gulmohars on Hyderabadi roads, it is easy to miss this large and leafy species. The Indian elm is a tall and beautiful tree; the specimen I see daily is three storeys tall. For a few weeks in the year it is the Cinderella of the cityscape, shedding its dark green leaves and donning a spectacular canopy of light, bright green seed-pods instead. In a few weeks, as the magic hour approaches, the pods turn brown, shake loose and fly away. The tree grows a fresh set of lush, green leaves and fades into the background.

If you notice trees, it is hard to miss the Indian elm (*Holoptelea integrifolia*) in the last weeks of February. As winter ends, *Deccani* deciduous trees prepare for the long, dry summer before the monsoons set in by the end of June. This cycle sets off a variety of flowering adaptations among these trees. The Indian elm's flowers are in-conspicuous, but its adaptation prefers to focus on the seed: the entire canopy is transformed and it looks as if the tree has a completely new kind of 'leaf' (they are seeds). After a few weeks, the seed-pods turn brown and dry, the tree sheds these pods and sprouts new leaves. However, I have found that the Indian elms in Hyderabad are erratic. Some quickly transition from old leaf, to seed, to new leaf. Others linger for weeks in the seed-phase, the dried-out coppery seeds quivering in the breeze. I have noticed big differences in this transition between elms that are only meters apart. It is fascinating to ponder over this adaptation in deciduous trees and how fungible and sensitive they are to available resources.

Cities in particular distort these ancient patterns of response to the climate cycle. Hyderabad is an artificial 'island' of tall, green trees in a vast and dry scrub-land of stunted trees and grasses. Human habitations, and modern cities in particular, draw water in from large distances. Municipal bodies, and individual homeowners, expend effort to water the grounds they control. Concrete, road,

Photo: Venkata Tejah Balantrapu
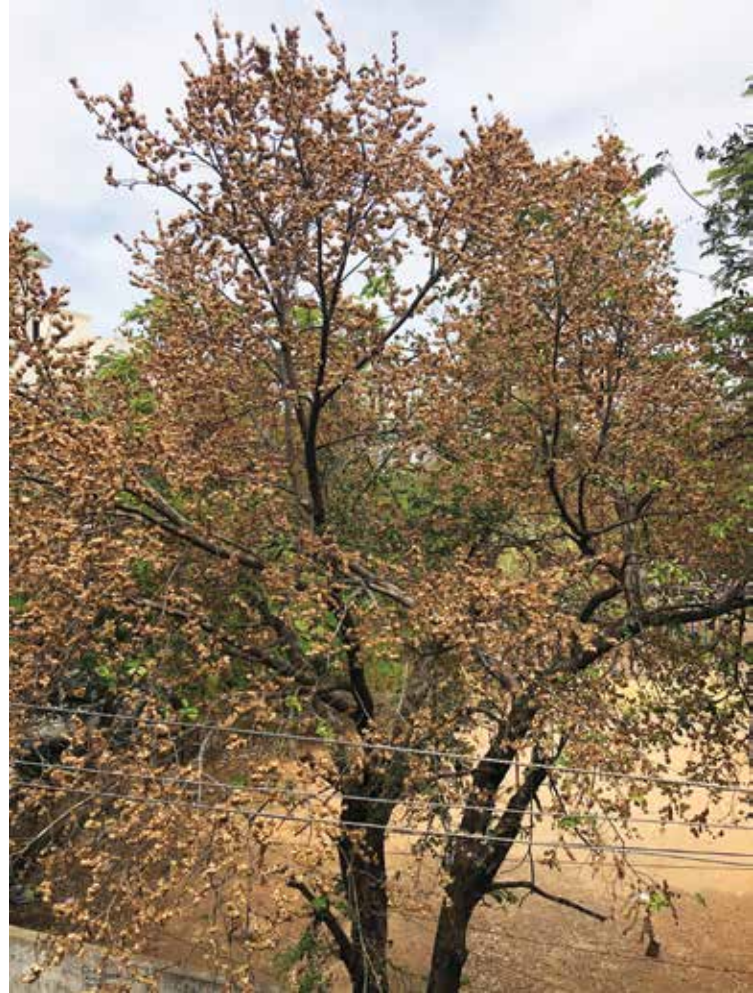
and other human actions alter the hydrology of a place, changing water tables and the flow of water. Naturally, this impacts trees and their cycles. Hyderabad's trees are also imprints of human migrations. It is home to British colonial staples like the bougainvillea or the gulmohar. You can also find a smattering of baobabs here. When did they come? With the *Siddis*, East African soldiers invited here by the *Asaf Jahis*, or an older group of merchant caravans? Turns out, even the ubiquitous tamarind came here in ancient times. Would these trees survive in the dry Deccan landscape and the poor soil around Hyderabad? Hard to imagine. The *palash* looks like a stunted plant for years, sometimes even

a decade, before it becomes a tree with adequate height and girth in the Deccan wilds. Deccan trees must account for the poor soil and availability of water, and the monsoons are their best bet. Trees inside the city limits have better access to water, perhaps, but 400-year-old Hyderabad is still too young to impact patterns ingrained in these trees' life-cycles. Monsoons matter.

Pradip Krishen writes that a variety of deciduous Central Indian trees are adapted to an "intense pulse of rainy weather, with the rest of the year remaining mostly dry". Take the spectacular *palash* (*Butea monosperma*) that we can find on the outskirts of Hyderabad. It too sheds its leaves around February-March and sprouts tongues-of-flame-like flowers on its bare branches. The lesser-known but equally spectacular Indian coral tree (*Erythrina variegata*) does the same thing – sheds all leaves and sprouts beautiful, 'come-hither-birds' flowers. Shedding halts transpiration and conserves water during the dry season. These trees quickly invest these resources in sprouting flowers, then seed, and drop them just as winter ends. If the seeds survive a few hot months, the rains arrive and the seeds can take root. This dance is tightly tuned to the monsoons and the dry weather preceding their arrival. The elm's rhythms though, are more relaxed, more *Hyderabadi*. It seems to be flexible enough to alter its shedding cycle based on available resources.

Summers in Hyderabad are different from the forests of the Deccan and its trees have access to other water sources during that difficult period. There are other constraints though, like the restricted space for a tree between the road and side-walk. Overhead power lines lead to ugly 'hair-cuts' by the electricity department. Canopies are haphazardly chopped due to a desire for unrestricted view of a building's facade, even to submit to superstition. An Indian elm must survive all these threats to its life. The ancient pressures of access to water, sunlight, and nutrients add to the risks it must face. The elm has to deal with more: it does not have the benefit of offering fruit to humans, curtailing its utility. Its bark is knotty and scabrous and is believed to have medicinal value – but not for city-dwellers who have access to Ayurvedic medical shops. So, why do they survive human apathy in the city? I do not know and can only be thankful for their presence. Tree-loving humans are not the Indian elm's only fans. During the summer months every year, a family of monkeys traverse across the apartment walls in our colony, following some ancient track that we have built our houses over. The Indian elm outside my apartment is a traditional stop. Its thick trunk, splits into two, a foot off ground level. The two conjoined lines are solid, rough and patchy, and give off many distributary branches that further splinter into terminals of leaf/seed. The younger monkeys in the brood spend time on the elm, munching its seed-pods ('monkey chips' as my sons would call them when they were younger), playing, rattling, and shaking its canopy for a few minutes. Soon, the dogs and humans in the apartment become nervous. A steady barking, hooting, and stick-beating begins, and the monkeys know they are unwelcome. They swing away, further down that bygone trail. Over a few decades, this tree grew to become a point, a way-station, where a generation of monkeys have learnt to stop. To see a tree is to recognize a node on an old matrix of events and memories for all of life. Human children too have memories of tree-climbing and fruit-picking, though increasingly less so, as our urban lives reduce access to trees.

I grew up in the city without knowing its trees, indeed being unaware of my tree-blindness. For many years, trees meant a shade of green, a source of shade during hot summer months and not much else. As a kid, I knew all the houses on my street, the kids in them, the scooters or motorcycles their fathers drove, the books some of them owned, but not the trees that dotted the place. The two trees that stepped out from this veil of ignorance were the coconut (*Cocos nucifera*) in some of the houses and the mango (*Mangifera indica*) in the juvenile correction centre at the far end of the street. That poor mango tree had kids pelting it for fruit from two sides of a high brick wall. Looking back, there were so many other trees: gulmohar (*Delonix regia*), copper-pod

Photo: Abhijith DA
Courtesy: www.wikipedia.org

(*Peltophorum pterocarpum*), kadamb (*Neolamarckia cadamba*), even flowering trees and plants like the pārijata (*Nyctanthes arbor-tristis*), tulasi (*Ocimum tenuiflorum*), hibiscus (*Hibiscus rosa-sinensis*), the frangipani (*Plumeria*), bougain-villea and a myriad roses. Some houses grew papaya (*Carica papaya*) to meet their needs for dietary fibre. A friend's house had guava (*Psidium guajava*) that my friends loved to eat, but I would stay away from. I liked fuller ones from the market, preferably with salt and powdered chilli. I stayed away from the gustatory pleasures of the jackfruit, the sitaphal, the banana (the small and sweet *chakkerakeli*) and other fruit sold on push-carts at the street corner for I detested their pungent scent. A city street had a rich floral diversity for those willing to see. However, I had taken no notice of them and sometimes actively shut them away for years. The cityscape meant buildings and people, not trees and plants. As a young adult, I have eaten at food-stalls and *chat bhandars* under massive banyans (*Ficus benghalensis*) without once looking up. I have been dragged to many a temple and made *pradakshinas* around the trees in them, almost always a peepal (*Ficus religiosa*), without knowing why and what tree I was praying to.

All this changed with parenthood. When one is charged with the custody of a young person, it is difficult to let the world pass you by without examination. I began to take notice of things that interested my toddler sons and tried to look at the world from their fresh perspectives. Slowly, a new world opened up. With children, it is difficult to be a hypocrite. I must eat the fruit I expect them to eat. When down with a fever, the coconut is a source of rehydration and relief; I know it and accept it with grace, so my sons see and learn (I hope). With adults, and perhaps with my boys too, the stomach is one way to accept the trees around us. The first time we

took our eldest son to a park he refused to walk on the grass, preferring the solidity of the tiled path. I had to sit on the grass and slowly coax him to shed his fears. Eventually, we walked around, touching the grass, pulling it out in tiny clumps and blowing it into the wind. Simple questions showed me I had no answers – what is that tree? Why is it so rough to touch? Why is this short while that is tall? My sons taught me to ask some fundamental questions, and then pushed me to seek answers for their sake.

Like me, my sons won't be climbing trees like the tamarind (*Tamarindus indica*) or the neem (*Azadirachta indica*). But we do join walks in the parks of the city, and with them, I learn to recognize the silvery bark of a young Arjuna – 'the white one' – tree (*Terminalia arjuna*), or the palmate leaf structure of the Saptaparni (*Alstonia scholaris*). Together, we try to differentiate the common trees on Hyderabad's roads as we go shopping, or meet friends. The hardest to pick out, especially when it's not full of its spectacular seed-pods, is the Indian elm. I know there are a couple of elms on the old Mint road. There is one hiding in plain sight opposite the NMDC building off Masab tank. A few scattered around the roads of the Osmania University. An Indian elm is not meant to be sighted from a speeding car, it must be observed with patience, over time. The elm is a Hyderabadi tree.

The city is changing, but so is the climate. Overnight, decades-old trees are chopped away to make space for expanding roads. As we conceive of cities that are modern and futuristic, old trees are like old buildings; memories of a past we want to leave behind. Municipal bodies bring in new and exotic species of trees so that our cities look like those from the far west, and perhaps, the far future. Trees, like banner ads and cinema posters, are expected to pop up when necessary and translocate when not. But cities are vast spaces, folding, twisting into streets, lanes and by-lanes. It is hard to keep track, and slipping through the cracks, I have hope that many trees will survive our blindness. When my sons are older, and I am gone, these trees will remain as markers of this time and this space. When they grow up and move out, I hope my sons will remember our apartment opposite the Indian elm tree.

The author is a writer and communications professional from Hyderabad. He is learning to spend time with trees, to recognize them on city roads, and to try and save them so that his sons can grow up in a city full of trees too. He can be reached at <tejahb@gmail.com>.

Photo: Deepak Patil
Courtesy: www.wikipedia.org

Celebrating women in science

Meena Raghunathan

A life of dedication

The story of Dr. V. Shanta (1927-2021) is the story of The Cancer Institute, Adyar. For her, the Institute and its mission were everything. She admitted that work was her only interest and that she was not social, had few friends, and did not keep in touch with those she had! So tied up was her life to the Institute that when she felt unwell a few days before her death, she said to those around her: "If I die, sprinkle my ashes all over the Institute. I don't want to leave this hospital."

She joined the Institute in 1955, just a year after it was founded by another remarkable lady, Dr. Muthulakshmi Reddy. Dr. Shanta served there till she passed away at the age of 93, still seeing patients and managing the Institute as chairperson. Dr. Shanta, who was related to two of India's Noble Laureates, (Dr. CV Raman and Dr. S Chandrashekar), was a recipient of the Magsaysay Award (2005) and the Padma Vibhushan (2015).

Her Magsaysay citation reads: "In an era when specialised medical care in India has become highly commercialised, Dr. Shanta strives to ensure that the Institute remains true to its ethos, 'Service to all'. Its services are free or subsidised for some 60 percent of its 100,000 annual patients [...] 87-year-old Shanta still sees patients, still performs surgery and is still on call twenty-four hours a day."

The Adyar Cancer Institute was only the second comprehensive cancer centre in India. It pioneered many areas of cancer care, becoming the first in the country to set up a nuclear medical oncology department, a medical physics department, a paediatric oncology department, to start a medical oncology unit, carry out the country's first rural cancer survey, create the first super-specialty course in oncology in India, set up the first cancer registry... and many, many more.

While it stays at the cutting edge of medical developments related to cancer, the core of the Institute is its mission to provide quality care for every patient, irrespective of their ability to pay. In fact, of the 535 beds in the hospital, only 40 per cent are fully-paid beds, 20 per cent patients pay a nominal amount, 40 per cent beds are free, where not only do patients not pay for treatment, but boarding and lodging is free too – living up to its mission 'To provide state of art treatment to any cancer patient irrespective of his or her economic status.'

This was the lifework of Dr. Shanta, along with Dr. S. Krishnamurthi, son of the founder Dr. Muthulakshmi.

1. What do the following words mean?
   a. Oncology
   b. Subsidized
   c. Mission
   d. Citation
2. Pick three lines from the text above, which to your mind, best demonstrate Dr. Shanta's commitment and dedication.
3. The Magsaysay award is often called the Alternate Nobel. For what is it given?
4. Can you find out something about the lives of Dr. Muthulakshmi Reddy and Dr. Shanta?

Women scientists who changed the world

Down

1. This world famous bio-technology company was founded by Kiran Mazumdar-Shaw.
2. Francoise Barre-Sinoussi jointly won the Nobel Prize in Medicine for the discovery of the Human Immunodeficiency Virus associated with this disease.
4. Lise Meitner was responsible for the discovery of Nuclear…
6. Aditi Pant, an oceanographer, was the first Indian woman scientist to visit this frozen continent.
8. Gertrude Elion developed drugs to treat blood cancer, also called this.
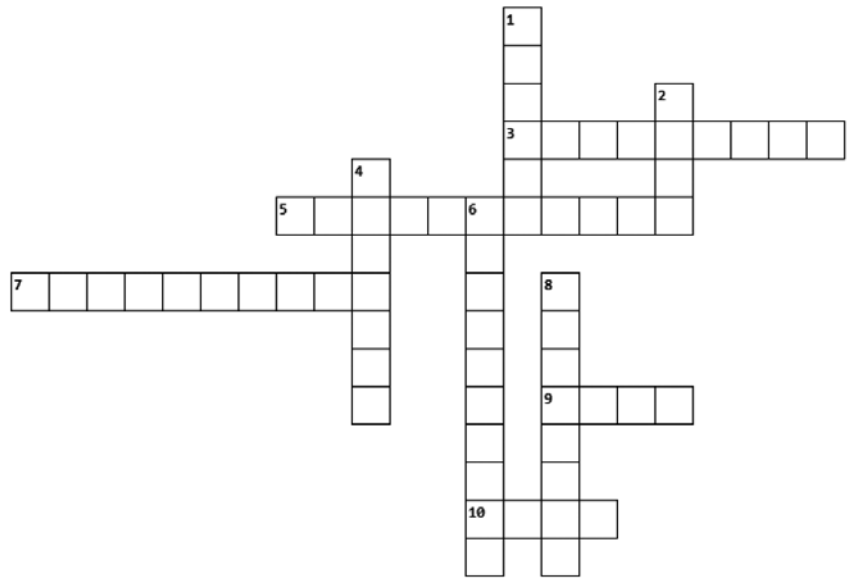
Across

3. Marie Curie won Nobel Prizes in physics and…
5. The animals that Jane Goodall studies and works to protect.
7. Rachel Carson's book *Silent Spring* warned the world of dangers due to these.
9. This is the last name of India's leading microbiologist and virologist, whose work helped India during COVID.
10. Dr. Kalaiselvi is director general of this critical council which leads science and technology R&D in India.

Lady with the graph

We all know about Florence Nightingale, the Lady with the Lamp. Born in 1820, this Englishwoman was a pioneer in nursing, working on the war front to take care of soldiers. At a time when women were supposed to stay at home and keep house, and the nursing profession was not considered respectable, she broke convention and trained to be one.

A lesser known fact is that Florence was a statistician par excellence, and in 1860 was elected the first woman Fellow of the Statistical Society. Her meticulous approach to collecting data in the hospital she worked at and analyzing it, at a time when even deaths were not properly tallied, led to a better understanding of the situation and helped reduce deaths. For instance, analysis by her and statisticians appointed by the British government led to the conclusion that 16,000 of the 18,000 deaths in her hospital were not due to battle wounds but due to preventable diseases, spread by poor sanitation. By using applied statistical methods, she effectively made the case for bringing in better hygiene practices, thus saving lives. She was aware that it would be difficult to convince decision makers of the need for change, and maybe out of this requirement was born what is today counted as her major contribution to statistics – the first infographic ever made. The best-known of the infographics she invented are what are called the "coxcomb" diagrams.

Find out what an infographic is.

Here is a table of some key health statistics for selected countries from the World Health Organization. Can you depict some of these aspects graphically, so a viewer can quickly understand the figures and compare them? (Data Source: https://www.who.int/data/)?

Data type	Total population (000s) Comparable estimates 2020			Life expectancy at birth (years) Comparable estimates 2019			Healthy life expectancy at birth (years) Comparable estimates 2019			Maternal mortality ratio (per 100000 live births) Comparable estimates 2017	Under-five mortality rate (per 1000 live births) Comparable estimates 2020	Neonatal mortality rate (per 1000 live births) Comparable estimates 2020	Tuberculosis incidence (per 100000 population) Comparable estimates 2020	Malaria incidence (per 1000 population at risk) Comparable estimates 2020
Member State	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes					
Afghanistan	19976	18952	38928	63.3	63.2	63.2	54.7	53.2	53.9	638	58	35	193	8.4
Argentina	22049	23147	45196	73.5	79.5	76.6	65.4	68.8	67.1	39	9	5	31	–
Australia	12699	12801	25500	81.3	84.8	83.0	70.2	71.7	70.9	6	4	2	7	–
Bangladesh	83259	81430	164689	73.0	75.6	74.3	64.2	64.4	64.3	173	29	17	218	0.4
Bhutan	410	362	772	72.0	74.4	73.1	63.2	63.5	63.4	183	28	15	165	<0.1
Botswana	1139	1213	2352	58.9	65.5	62.2	51.9	55.8	53.9	144	45	22	236	1.1
Brazil	104436	108124	212559	72.4	79.4	75.9	63.4	67.4	65.4	60	15	9	45	3.9
Canada	18732	19010	37742	80.4	84.1	82.2	70.5	72.0	71.3	10	5	3	6	–
China	741999	705471	1447470	74.7	80.5	77.4	67.2	70.0	68.5	29	7	3	59	–
Denmark	2879	2913	5792	79.6	83.0	81.3	70.7	71.4	71.0	4	4	3	5	–
France	31589	33684	65274	79.8	85.1	82.5	71.1	73.1	72.1	8	4	3	8	–
Greece	5116	5307	10423	78.6	83.6	81.1	69.9	71.9	70.9	3	4	2	5	–
India	717101	662903	1380004	69.5	72.2	70.8	60.3	60.4	60.3	145	33	20	188	3.2
Indonesia	137718	135806	273524	69.4	73.3	71.3	61.9	63.8	62.8	177	23	12	301	2.9
Japan	61753	64723	126476	81.5	86.9	84.3	72.6	75.5	74.1	5	2	<1	12	–
Malaysia	16631	15735	32366	72.6	77.1	74.7	64.5	66.9	65.7	29	9	5	92	0.0
Pakistan	113672	107220	220892	64.6	66.7	65.6	56.9	56.8	56.9	140	65	40	259	2.5
Saudi Arabia	20131	14683	34814	73.1	76.1	74.3	63.8	64.4	64.0	17	7	3	8	<0.1
South Africa	29216	30093	59309	62.2	68.3	65.3	54.6	57.7	56.2	119	32	11	554	0.8
Sri Lanka	10267	11146	21413	73.8	79.8	76.9	65.1	69.0	67.0	36	7	4	64	–

The girl who played with numbers

Lilavati was the daughter of Bhaskara II, an eminent mathematician of the 12th century. He lived in Maharashtra and wrote many important books on mathematics. One of these was *Lilavati*, named after his daughter. *Lilavati* has 13 chapters, dealing with arithmetic, interest calculations, geometric progressions, plane and solid geometry, a method to solve indeterminate equations, etc. It contains many problems presented in the form of poems, addressed to his daughter Lilavati. Lilavati was obviously an intelligent girl, who had a good foundation in mathematics and enjoyed working on problems.

Here are a few examples from the book, which you could try solving!

Oh Līlāvatī, intelligent girl
If you understand addition and subtraction
Tell me the sum of the amounts 2, 5, 32, 193, 18, 10, and 100,
As well as [the remainder of] those when subtracted from 10000.

A fifth part of a swarm of bees came to rest on the flower of Kadamba,
Third on the flower of Silinda.
Three times the difference between these two numbers flew over a flower of Krutaja,
And one bee alone remained in the air, attracted by the perfume of a jasmine in bloom.
Tell me, beautiful girl, how many bees were in the swarm?

A beautiful maiden, with beaming eyes,
Asks of which is the number that multiplied by 3,
Then increased by three-fourths of the product, divided by 7,
Diminished by one-third of the quotient,
Multiplied by itself, diminished by 52,
The square root found, the addition of 8, division by 10
Gives the number 2?

(**Source:** https://www.samskritabharatiuk.org/lilavati-of-bhaskara/; https://www2.math.uconn.edu/; https://gauravtiwari.org/)

(**Note to teachers:** The first problem is simple. The answer for the second is 15 and the third is 28. Workings are available on the Internet).

Facing challenges, achieving breakthroughs

Women scientists have not had an easy time. Almost all of them had to fight to pursue their interests in science and math. About two centuries ago, it was not even possible for women anywhere in the world to get a science education or degree. Their achievements were not taken seriously. Working conditions were made difficult. In spite of all this, many brave women persisted and cleared the path for generations to follow.

Did you know?
- It was only in 1920, just about a 100 years ago, that Oxford University allowed women to get degrees?
- At about the same time, Emmy Noether, a brilliant algebraist was not allowed to teach at the University in Erlangen, Germany, because the University felt men would be shocked to have a woman lecturing to them in their university classes.
- In 19th century England, Mary Somerville needed her husband's approval just to write a book about mathematics.
- Lalitha Ayyala Somayajula, India's first engineer, had to take permission not only from the college but also the British government, to enrol in the engineering course. She successfully graduated in 1944, but all her certificates said 'he', instead of 'she'.

Some of us have come a long way. But even today, many girls face barriers to taking up science, engineering, or mathematics related professions. What are some of these challenges? Make a poster on the challenges you see to women entering and succeeding in such careers. Your class can put up an exhibition of these posters on March 8, International Women's Day.

Try to interview a woman who is a senior professional in any of these areas – (maybe someone in their 50s, 60s, or 70s), ask them what challenges they had to face during their education and careers. Were their families supportive? Did they have any friends or mentors who helped them? How did they meet the challenges? What advice do they have for girls who pursue these careers?

Meena Raghunathan worked at Centre for Environment Education for close to two decades. After that she set up and headed the CSR arm of the GMR Group. She writes for children and teachers, as well as others. Her latest book is: *Doing Good: Navigating the CSR Maze in India* (Harper Collins). She can be reached at <meena.raghunathan@gmail.com>.

In harmony with nature

Chintan Girish Modi

Mita Bordoloi likes to describe herself as "a mother of three daughters, a lover of animals and plants, and a writer of stories for adults and children". Her creativity is nourished by the cultures and geographies that she has been intimately connected to. While she was born in the valley of the Brahmaputra river in northeast India, the land of the Mississippi in the United States has been her home for the most part.
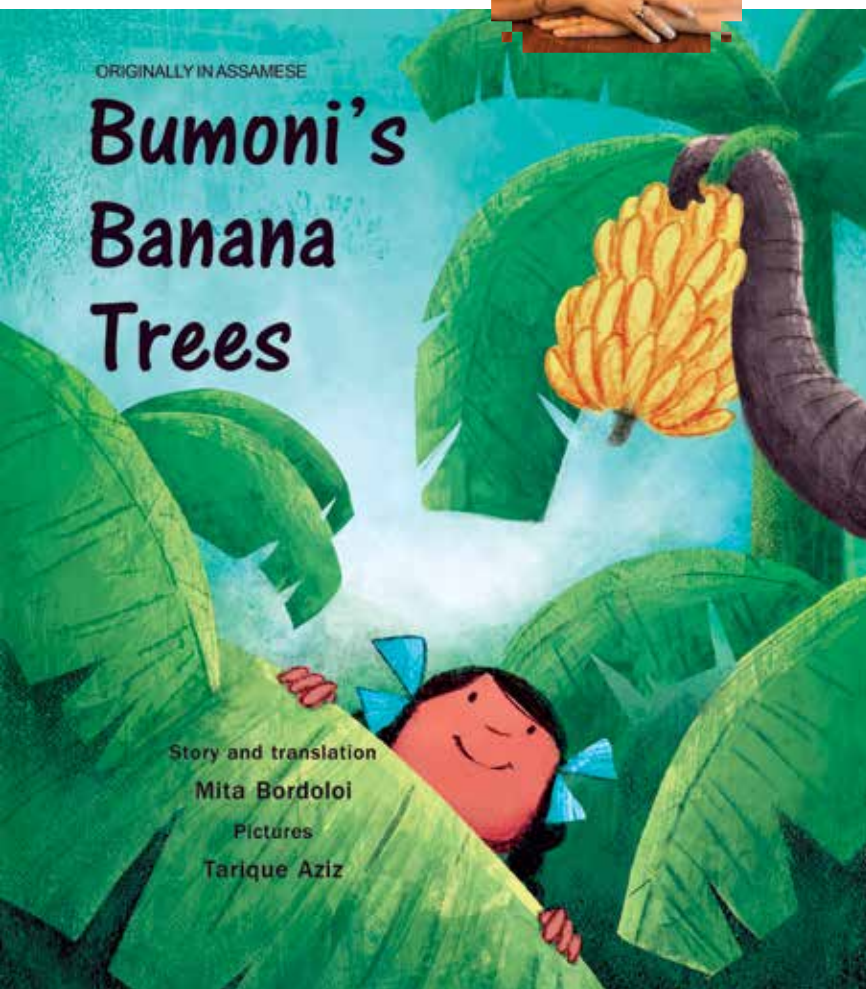
Bordoloi's gift for storytelling has captivated the imaginations of readers as well as award committees. *Bumoni's Banana Trees*, the picture book that she created in collaboration with illustrator Tarique Aziz, won the Neev Book Award 2022 (Early Years) and the Green Literature Festival Honour Book Award 2022. Produced by Tulika Publishers, this book is recommended for readers who are above the age of four.

Bumoni is an endearing protagonist. She loves eating bananas and getting her fill is easy because they grow in her backyard. Since there is an abundance of banana trees, her family uses them in multiple ways. Her brother uses the stems to make bowls while her mother cooks the banana blossoms. Her father makes a boat using longer banana stems when he goes fishing in the river, and her sister lays out banana leaves on the ground just before meals are served so that these can be used like plates when they eat together.

The used banana leaves are not treated as garbage. They are tossed into a pit so that hungry cows can use them as food. Without being pedantic or prescriptive, the author communicates how nature takes care of us and how we can do the same by being grateful, sharing, and recycling.

Bumoni lives close to the Kaziranga National Park, so she is able to hear the sounds of elephants, tigers, rhinos, hoolocks, and many kinds of birds. If she is lucky, she even gets to see some of them by the river when they come out at sunset. Aziz's illustrations help readers enter this majestic landscape that can be both beautiful and scary.

ORIGINALLY IN ASSAMESE

Bumoni's Banana Trees

Story and translation
Mita Bordoloi

Pictures
Tarique Aziz

Read this book to find out what happens when a herd of wild elephants crossing the river land up in Bumoni's backyard and gobble up the bananas and banana leaves over three consecutive nights. Like the rest of her family, Bumoni wants to prevent the elephants from returning. At the same time, she wants to ensure that they have sufficient food to eat. She hits upon an excellent idea.

This book is charming not only because a child – rather than an adult – saves the day but also because it shows that conflicts can be resolved in healthy ways that fulfill the needs of both parties. Children will come up with several other observations, perspectives and questions when they read the text and engage with the illustrations. Parents, teachers, grandparents or siblings who read the book along with children can also introduce them to recipes that use different parts of banana trees. Wherever possible, children can also be taken to the market where different kinds of bananas are available so that they get to learn what makes each one unique and for what purposes they are used.

We bring you an interview with Mita Bordoloi.

What was the starting point for this story? Did you begin with Bumoni as a character or the idea of a human-animal conflict, or banana trees? How did you develop it further?
The human-animal conflict was on my mind. It was important to me that they lived sustainably side by side, balancing the natural habitat. Bumoni's feisty character emerged spontaneously in this setting. Bumoni is a common and endearing Assamese name. It was further developed from the scenes taken from my lived experiences. We had endured many attacks by wild elephant herds on our paddy fields, banana groves, and sugarcane cultivation when I lived in the setting of the book in Kaziranga.

What aspects of your childhood did you draw inspiration from while writing this book? To what extent is Bumoni based on you as a child?
When I lived on the periphery of Kaziranga National Park in my teens, elephants did come to eat our bananas and sugarcanes at night. I naturally loved animals and had empathy for them. I did think of finding solutions to this ongoing problem. In that sense Bumoni's empathetic heart resembles mine.

Tarique Aziz is an illustrator, designer and nature lover from Assam. He is fond of reading about marine line and dinosaurs in his spare time. He has illustrated many books for children including *Jamlo Walks* written by Samina Mishra, *When I Grow Up* written by Priyadarshini Gogoi, and *What's That Smell?* written by Ashwitha Jayakumar.

How was the experience of illustrating this book, especially as it is set in Assam where you've grown up?
I was immediately emotionally attached to the book when I read the first draft of the story. The book was fun as well as challenging for me. There were a lot of elephants to draw and so I really had to practice drawing a lot of them in order to get it right. My father used to work in the forest department and as a child my mother used to tell me stories about wild elephants and their conflict with humans, which she had experienced when my father was working in Bokakhat, a small town in Assam, where such conflicts were very common. So it was very fascinating for me to work on the visuals for this book.

You wrote the story in Assamese before translating it into English. What was the process like? Were there words or concepts that were challenging to translate?
When I originally thought of Bumoni and her story, I didn't think that she would be speaking English. She was a village girl from the outskirts of Kaziranga. She authentically spoke her words in Assamese to me. It made sense to have the original language of the book to be in Assamese.

It might be interesting to note that I used the word 'ranger' in my Assamese version because I thought it was a word that had permeated the lives and vocabulary of people who lived near the Kaziranga National Park even though they spoke Assamese.

Could you tell us about the visual style that you've chosen for this book? You seem to have used water colours and oil pastels. Please correct me if I'm wrong.

Actually the final art is all digital. Yes, they do look like pastels because I used custom brushes which were specifically created to get that look. This style of colouring was specially created for this book. The idea was to make it look different from the 'typical' picture book style. So we explored a few options and finalized this one. It uses very bold strokes and a heavily textured but minimalist approach to the details and colouring.

Were you working with an art director at Tulika, or only with the editor and Mita? How did their suggestions contribute to your images?

I worked closely with the designer at Tulika and author Mita Bordoloi and their feedback for each spread really helped elevate the entire book's artwork to a whole different level.

How did you figure out the look and feel of the book, the choice of colours and textures? Do you want to add anything else?

The look and feel were developed primarily with the ambition of working in a style different from what I usually do. I was certain that I wanted to use some heavy textures for this one, so that was the first thing I finalized. Everything else was developed after a lot of trial and error and trying different variations of rendering.

But I was happy that in the Bengali version it was described as the people who took care of the national park and in the Hindi version as the employees of the jungle.

Were elephants an important part of your formative years? Could you recall for us the first time that you saw an elephant?

I was born in the Digboi oil town. Elephants were regular visitors there as well. In fact, oil was first discovered in Assam by a logging elephant. My first glimpse of an elephant was a domestic one, but my first thrilling moments of seeing wild elephants were in the Kaziranga area. A herd of wild elephants woke us up at night making crackling sounds behind our house. They were gobbling up our sugarcanes.

Did you spend a lot of time at Kaziranga National Park?

I spent about five years in the Kaziranga area as a young girl.

What kind of research went into the process of writing this book?

This book wrote itself organically from my lived experience. It did not need any serious research.

Would you like to share anything else about the backstory that led to the book?

Lately, while watching YouTube videos, I was appalled and enraged by people's wild, loud, and rowdy reactions to the gentle beasts crossing through their age-old corridors. I did not want the next generation of humans to grow up as insensitive to wild animals. I wanted to inculcate empathy, especially at the grassroots level. So, I bought a big chunk of the Assamese version of the books and donated them to wildlife NGOs such as Aaranyak, Hati Bondhu, and Wildlife Trust of India (WTI), to be distributed to the children living in the elephant corridors of Assam. The idea was that it will be replicated in West Bengal and elsewhere as well. I had read in WTI's website that a young schoolteacher was giving sensitivity training in the five elephant corridor areas of north Bengal. Another young WTI staff member who specialized in elephants had liked the idea when I had brought it up in an email, but, of course, action is difficult to come by, or match my enthusiasm.

I also wanted a depiction of sustainability, renewability, and biodegradability of the banana trees in minute details. For instance, I wanted the bowls made from the banana stems to be the rectangular ones called 'khul' in Assam, and Tarique (the illustrator) being from Assam delivered them as accurately as I had envisioned. I think 'khuls' are peculiar to Assam, and they are used extensively in the Namghor/monasteries during gatherings for distribution of prasad or meals. I took poetic license to bring this unique piece of culture to the book.

The author is a bibliophile, journalist, and educator based in Mumbai. He can be reached at <chintan.writing@gmail.com>.

Plural perceptions and deciphering the whole

Divya Sharma, Smriti Tiwari, Neha Khandekar, and Rinan Shah

Recently we concluded COP-27, which is one of the largest gatherings to engage with the current complex issue of climate change. Several youth-led coalitions and young leaders from around the world have time and again come together in these global meetings to demand action from country leaders and representatives. The urgency is felt loud and clear. The question is what is missing between our intention and action.

If we look deeper into environmental problems, we may find that there is a fundamental disconnect with regard to how we perceive the reality of the situation. There is an inherent limitation within us as humans to make sense of a complex phenomenon. As an individual we might never be able to understand what large infrastructure can do to river or forest ecosystems? Or, how urban floods might be linked to something at a global scale as well as to something that has been happening slowly from the past 80 years locally? Or how our current actions can change long-term future trajectories?

Many of these limitations are becoming detrimental to us as well as the survival of many other species with whom we share this planet. It's almost like cutting the branch we are sitting on!

Can we become deliberate in understanding each other's points of view and facilitate the processes of understating the whole truth? This led to the birth of the vision of 'breaking silos' with the intention that we can unveil our own shortcomings and break the inertia for more collaboration in the spirit of understanding the problem and problem solving.

These motivations were an impetus to participate in the "Rivers of Life" festival at Azim Premji University, Bengaluru on 15 November 2022 and organize the workshop titled "Unpacking Wicked Problems in India in Water".

Co-learning in workshop mode
Tell me and I forget, teach me and I may remember, involve me and I learn. **– Benjamin Franklin**

Human intelligence or cognitive ability evolves through continuous engagement with peers and the environment. Rote learning is useful in remembering concepts and analyzing them, whereas active learning, which happens in a workshop, leads to critical thinking and reflective engagement. A workshop becomes a space where individual minds are nudged to focus on one specific idea. The collaborative engagement paves way to collective imagination and innovation.

The workshop *"Unpacking Wicked Problems in India in Water"* was designed to engage school students and to reflect on three ideas/concepts: 1) Perception of reality differs because of positionality, 2) The whole is more than the sum of the parts, and 3) A complex problem can be unpacked and traced back to issues in values and norms.

Activities and outcomes
To engage school students with intricate ideas, games and activities were designed. We started with simple activities which involved demonstration and guessing games and then progressed to team activities that were more rigorous in terms of imagination, cognition, and reflectivity to unpack complex problems.

Activity 1: Different perceptions
Different people can see the same thing but still perceive it differently. Perception is the interpretation of reality through one's mind construct, embedded in past learnings and expectations. Collaboration needs a cognizance that alternate perceptions exist of the same reality. The understanding of alternate views creates fertile ground that enables exchange of thoughts, imagination and innovative ideas.

Students trying to understand diversity in perspectives
(Rivers of Life, Azim Premji University, Bengaluru)

Glass half full or half empty?
(Rivers of Life, Azim Premji University, Bengaluru)

The first activity warmed up the students to become more open in receiving counter views and conflicting thoughts from the peer group. It encouraged them to go beyond right or wrong and respect each other's world views.

We drew a 6 on the ground and asked a few students to split into two groups and view the figure – half the group saw it as a 6 and the other half saw it as a 9. The rest of the students were asked which group was right. There was unanimity that both were right. That resonates with the concept that two contrasting ideas about the same reality can be different but also right at the same time in their own sense.

Similarly, students were asked whether the glass was half empty or half full, invoking the idea of difference in perception.

We then progressed to 'guess the animal' series of games in which different objects were shown as part of the puzzle to guess the animal. The game activated the imagination and connection building of the students.

The idea of diversity in perception and connection building set the stage for the next two activities where imagination and collaboration were required.

Activity 2: The whole is more than the sum of the parts
Many times we can perceive only a part of reality. Various aspects stay hidden or are beyond one's

cognitive ability or ignorance. The next activity helped students realize that what we see might only be a part of the truth and the whole might be entirely different from what the parts look like.

The whole is more than the sum of the parts. **– Aristotle**

Borrowing from the story of the blind men and the elephant, we asked the students to create an animal from self-drawn pictures of five disconnected objects – a wall, a rope, a fan, a snake, and four tree stumps. Students were divided into groups and were encouraged to discuss and create an animal. After some quick brainstorming, the students came up with the elephant shared below with an extra dose of creativity of not a hand drawn fan but a paper folded fan that represented the ear of the elephant.
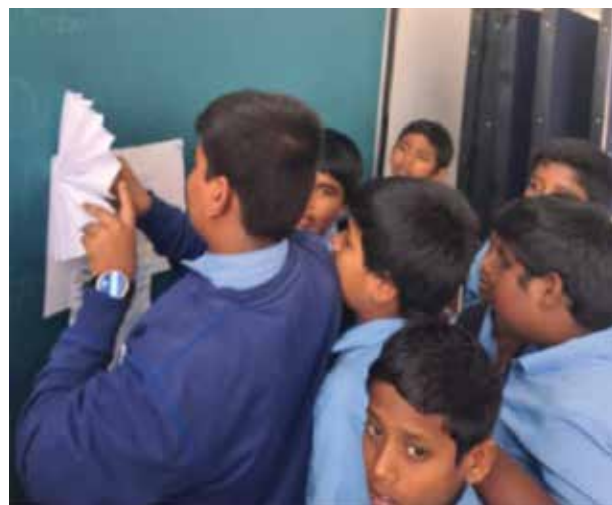
The elephant is not the snake, nor the fan, nor the log, nor the wall, nor the rope. Neither is the elephant the sum of all of these things put together.

Activity 3: Unpacking the Bengaluru floods

A hazard like floods has a differentiated impact on people and the environment. An urban flood is often a manifestation of diverse systemic failures in infrastructure and institutions involved in an urban space. The next activity nudged the students to think systematically in unpacking the root cause of urban floods by focusing on one specific question at a time.

As a closing activity, we introduced the group to the incident of the Bengaluru floods in August 2022, using a series of pictures depicting incidents and situations that emerged during the floods.

We divided the students into five groups of 8-10 students, where each group picked a specific storyline to deconstruct the problem of the flood. They were then asked to choose any one situation they found important and by using chart papers and coloured pens, each group had to create three layers by trying to answer the question: 1) What? – defining the problem they saw in the picture. 2) Who? – people/institutions involved in creating/adding to the problem identified in the previous question and 3) Why? – underlying thinking of the people or institutions identified in the previous question. The groups worked on each question on chart papers and came up with insightful observations as we nudged them to dig deeper each time.

Students identified five diverse impacts of the Bengaluru urban floods – livelihood, domestic water scarcity, agriculture, hospitals and healthcare, and traffic. The first group engaged with the livelihoods of vendors. Issues like not having space to carry out their business impacting their livelihood and how this further affects the credit and debit process. Questions regarding how one can buy from another vendor and not their regular vendor also showed up. Carelessness and lack of awareness of the people, lack of plans by institutions and the government were highlighted. Irregular, unseasonal rainfall, removal of trees for urbanization and pollution were seen as causes of the problem.

Domestic water scarcity was the issue the second group wanted to address. Since most of their households (students were from the rural part of Bengaluru) did not have private water connection, they fill water from the public tap. As for drinking water, they use the water ATMs, since the water they get is not potable. During floods, carrying water might get hindered. The government is not proactive in sanitation which makes availability of drinking water difficult. Blocked roads restrict movements. Mosquitoes also breed in stagnated water. According to them, the Panchayat members are lazy and careless about the drainage system and think only about money. They are certain that even if one approaches the Panchayat they will not listen. People also litter plastic everywhere.

The third group picked up the issue of agriculture. They did a macro analysis of farmer suicides, markets, economic condition of the nation, increase in demand, and malnutrition leading to larger impacts on the nation. The causes they pointed out were global warming, acid rain, and dam construction. The creation was attributed to profit, inflation and multinational corporations.

Floods affecting hospitals and healthcare was the topic chosen by the fourth team. They identified that the mobility of the patients and healthcare professionals becomes restricted during floods. Even ambulances will find it difficult to reach their destinations during emergencies. One cause identified by them was that the government permitted cutting of trees to extend roads and this is increasing instances of floods since there is no space for water to flow. BBMP (Bruhat Bengaluru Mahanagara Palike), institutions and businessmen are involved in causing floods. For the third question, they answered that there seems to be a lack of empathy and humanity.

Chart 1: What is the problem in the selected picture?
- Who are affected by the problem in the picture?
- Draw, stick figure, thought bubble etc

Chart 2: Who are involved in creating the problem?
   -People? Institutions? Nature?
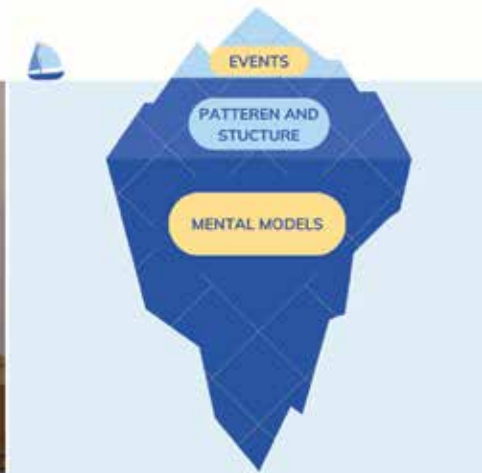- Draw, stick figure, thought bubble etc.

Chart 3: Why are these things/persons/institutions creating/ adding to the problem?
- How do they think? What do they want?
- Draw, stick figure, thought bubble etc.

ICEBERG MODEL

EVENTS

PATTEREN AND STUCTURE

MENTAL MODELS

Traffic, the eternal issue in Bengaluru, was picked by the fifth group. Pictures of private buses and cars and electric poles falling were displayed. Factories were seen as the cause of this issue. The students interestingly pointed out that factories produce plastic but there is no choice as it is required for our daily use. By the time the students came to the third chart/conclusions which had the why question, they were uninhibited about pointing out the facts which not only dealt with the efficiency of the system but also included the values of empathy, humanity, care, responsiveness, and others.

The group that worked on livelihoods captured subtle nuances such as a customer feeling bad for buying from a different street vendor because the regular one didn't show up while the group that worked on agriculture went into details such as malnutrition as well as economic markets suffering. The students were also able to see that all these consequences are not only due to natural causes such as rainfall, global warming, etc., but are also the result of (in) action by governments, institutions, businesses, and so on. The most interesting insights came from answers to the third question. They came up with insights such as greed, laziness, lack of empathy and humanity as well as the lack of choice for some individuals that may be causing the problem but have to earn their livelihood this way.

After this exercise was completed, the students were asked to put their charts on cardboard boxes arranged in a pyramidal manner. In this way, we were able to show them that often many of the problems we face have the same underlying causes and are motivated by similar norms and values. Therefore, sustainable change will be possible when we are able to come together to discuss problems and work at all levels of the pyramid to solve them.

As a team of facilitators, this interaction with the young minds of today left us re-energized and inspired to continue to do what we do and do it better each time. We hope to organize more such workshops for different age/professional groups.

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Get ready...to pause

Aarthi Prem

I'd like to share with you a diary entry of mine from five years ago.

"Today has been a hectic day with a full load of work, both at home and at the music school. I was able to do justice to my schedule till mid-day, but after that it seemed like each hour was getting shorter and I was not able to complete my tasks. I think the task that really got the better of me was when I sat down to teach my son and daughter, who are being home-schooled. I greeted them, we settled down with our books and notebooks; my children shared information on Descartes, a mathematician who had founded the Cartesian coordinate system by thinking in air, without any notebooks! I really like to listen to them when they share something; it is so much fun to hear fresh perspectives. Then, I proceeded at full speed, opened their math workbook to the chapter that said Fractions, turned to page 102 and we started solving the problems given there.

I read out the first one: Simplify the fraction 4/12. It was an easy one I thought. I had shared the concept with them yesterday and the day before. I waited for an answer. And it came, "4/3".
My face betrayed nothing. I said, "Do you want to think about it a little more?"
Another answer this time, "¼".
I was exasperated. I had spent a whole half an hour the day before teaching them fraction simplification and equivalent fractions.
I couldn't wait anymore. I told them the correct answer, 1/3, and let them in on how I got to it. We finished the next 10 problems rapid-fire, and the children made a couple more mistakes. Thinking today was not a good day, I aimed at finishing what we had started off with by discussing fraction simplification.
Definitely, my children must have sensed the unrest and disappointment in my voice and body language.

I am sure that parents who teach their children at home can relate to this. How many times do we tell them, "I want the right answer this time, think about it well"? For most of us, parents and teachers, as we try to cope with our busy lifestyles, teaching our own children or other children at school has become just one of the many tasks that we do. Most teachers I am sure will agree that administrative tasks or tasks related to teacher-student committees, or club activities demand almost the same attention as teaching in class. In addition, there are the regular classroom problems of children not paying attention or the more active and attention-seeking ones disturbing their peers, and such other issues that can haunt a teaching environment.

This is not an easy situation, but in the end, what matters is the teacher's ability to draw out the potential in every child and create a true (not ideal or perfect) teaching-learning environment in which the child can blossom. A few radical thought shifts can help a teacher do this and one such shift happened to me when I was listening to classical music one day. I realized the importance of a pause and how it can improve a learning environment.

A conscious intentional pause that is incorporated while teaching, sharing, addressing improvements, and giving feedback is a powerful silent moment that aids our brain, mind, and heart to connect the dots and put them together. A simple pause readies our mind to soak in the information that is coming our way. I experienced this while listening to my favourite singers' concert. The pauses between phrases made

Illustration: Aarthi Prem

me eager to know what the next musical phrase was going to be.

Taking my own diary entry as an example, if I had taken the time to revise in the beginning that a fraction is a number between two whole numbers and *paused...* then continued that any fraction could be written in multiple forms, a simple form and many complex forms and *paused...* then explained that a complex form of a fraction could be simplified by dividing both the numerator and the denominator by the largest common factor and *paused...* and then, if I had moved on to the exercise problems, my children's learning curve might have looked different for that day.

A pause can also become a useful strategy to trigger reflective thinking in students. For students who don't want to think and find solutions to a problem under the pretext that they are not good at the subject, a teacher or parent's willingness to repeat the process of questioning, pausing, and probing for answers until the student can clearly figure out the solution helps them gain confidence. Pausing strategically between words and sentences could also mean teaching effectively. A long pause consciously inserted between sentences while teaching a new chapter can have an echo effect. Students hear the words from the teacher for the first time and the second time in their own heads. Long pauses help the mind comprehend data rather than just stack and store it.

I can hear many of you asking, "But where is the time to pause? Where do we have the time to incorporate such learning strategies?" True, in this fast-paced world, we find ways to just keep going, to keep functioning, afraid to pause and think, afraid that we may miss the next task, the next opportunity, the next party, the next get-together. But let's pause and think, it takes just one mindful act a day to create a wave of meaningful education. Just as every drop adds to make an ocean, every study session, every strategy adds to produce a life-long self-learner.

Let's pause and imagine a world where we don't make teaching merely a task on a never-ending 'To-do list', but a meaningful interaction, where we can feel the learning and the connections happening at the end of the learning session when we...*pause*.

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Kya woh mere log hain?

Children, citizenship and poetry – 2

Samina Mishra

मेरे लोग / K

वह लोग जो इंडिया में रहते हैं
क्या वह मेरे लोग हैं?
वह लोग जो पाकिस्तान के लिए लड़ते हैं
क्या वह मेरे लोग हैं?

वह बच्चे जो मेरे साथ क्लास में बैठते हैं
क्या वह मेरे लोग हैं?
वह टीचर जो क्लास के बच्चों से गुस्से से बात करते हैं
क्या वह मेरे लोग हैं?

वह फैमिली के लोग जो मेरे साथ रहते हैं
क्या वह मेरे लोग हैं?
वह मामा जो फॅमिली से लड़ते हैं
क्या वह मेरे लोग हैं?

वह नानी के गाँव के लोग जो कहते हैं –
"नदी में पानी ज़्यादा है, वहां मत जाओ!"
क्या वह मेरे लोग हैं?
वह दुकान-वाले जो लड़कियों को गन्दी नज़र से देखते हैं
क्या वह मेरे लोग हैं?

वह लोग जो दुनिया के पर्यावरण को बचाना चाहते हैं
क्या वह मेरे लोग हैं?
वह लोग जो धरम पर लड़ाई करते हैं
क्या वह मेरे लोग हैं?

My People / K

Those people who live in India
Are those my people?
Those people who fight for Pakistan
Are those my people?

Those children who sit with me in class
Are those my people?
Those teachers who talk angrily to the children in class
Are those my people?

Those family members who live with me
Are those my people?
That uncle who fights with the family
Are those my people?

Those people in my Nani's village who say –
"The water's high in the river, don't go there!"
Are those my people?
Those shopkeepers who look at girls lecherously
Are those my people?

Those people who want to save the world's environment
Are those my people?
Those people who fight because of religion
Are those my people?

मेरे लोग / S

वह दोस्त जो मुसीबत में साथ देते हैं
क्या वह मेरे लोग हैं?
वह पडोसी जो छोटी-छोटी बात पर लड़ते हैं
क्या वह मेरे लोग हैं?

वह फैमिली के लोग जिन्होंने मेरी बहन की शादी के लिए पैसे दिए थे
क्या वह मेरे लोग हैं?
वह नानी जो मुझ पर शक करती है
क्या वह मेरे लोग हैं?

वह किताब महल लाइब्रेरी के लोग जो मुझे हर चीज़ में चांस देते हैं
क्या वह मेरे लोग हैं?
वह लोग जो ताज होटल के अंदर जाते हैं
क्या वह मेरे लोग हैं?

वह टीचर जो मेरी बात सुन्ते हैं और मुझे समझते हैं
क्या वह मेरे लोग हैं?
वह पुलिस-वाले जो अमीर का पैसा लेकर गरीब पर इलज़ाम लगते हैं
क्या वह मेरे लोग हैं?

वह पवई के चाल के लोग जो मेरे साथ 14 अप्रैल को आंबेडकर जयंती मनाते थे
क्या वह मेरे लोग हैं?
वह लोग जो मस्जिद तोड़ते हैं
क्या वह मेरे लोग हैं?

My People / S

Those friends who are with me in difficult times
Are those my people?
Those neighbours who fight on small things
Are those my people?

Those people in my family who gave money for my sister's wedding
Are those my people?
That grandmother who is always suspicious of me
Are those my people?

Those people at Kitaab Mahal library who give me a chance to try everything
Are those my people?
Those people who walk into Taj Hotel
Are those my people?

Those teachers who listen to me and understand me
Are those my people?
Those policemen who take money from the rich and falsely accuse the poor
Are those my people?

Those people in the Powai chawl who on April 14 celebrate Ambedkar Jayanti with me
Are those my people?
Those people who tear down mosques
Are those my people?

When children write from their lives, they are both expressing what they feel and developing a sense of self and of the world. They think of what has been important to them and in making that choice they begin a process of understanding why it is important to them. This continuing part of the essay (the first part appeared in the January 2023 issue of *Teacher Plus*) explains how a writing exercise on a prompt relating to the idea of fraternity worked as a process of co-creation, allowing for a richer understanding for both children and adults.

The prompt and the process

The word fraternity translates in Hindi as bandhuta. However, this is not a word commonly used, and so for our discussions, I chose to use the word apnapan, which evokes a sense of belonging in reference to people one considers one's own. Thus, the prompt I gave them to write was Mere Log, My People. As the facilitator, my central concern was to enable them to express in their voice. So, it was necessary for me to emphasize that they draw examples from their lives, their worlds. There are myriad ways in which people make ideas their own by living the intertwined lives that they do. Children receive ideas like community, caste, rights, and citizenship in different ways, but they really make sense of them through the everyday

that they experience. The everyday is not neat and orderly, it does not fit into existing frames, it can even seem to create confusion. Children walk and play in that everyday, sharing space in a site where both public and private spaces are limited. It is from those lived experiences that they find ways of being together, of seeing each other as both different and same. Thus, it is to the everyday that I turned to enable the children to express in their own voice.

In our individual conversations, K and S had spoken of people they felt were their own and as shared earlier, the responses did not reveal neat boxes of belonging, formed out of religious, caste, or class groupings. Instead, the everyday experiences reflected overlapping spaces and groups where they felt a sense of *apnapan*. But for the purpose of the exercise, I needed to create a structure that they could use and flesh out with their own examples. I did this by first identifying the spaces in their lives that we could explore – the home, school, neighbourhood, and country. I then asked them to make a list of situations where they felt they belonged, when they had felt a sense of *apnapan*, as well as a list of when they had not, for each space. This helped to connect the abstract idea of fraternity and belonging to tangible material spaces and lived experiences. I then suggested that select examples

from the list be written up along with the use of a repeated line to create a rhythm for the poem. At first, I suggested drawing from the prompt, Mere Log, to create a repeated line like Woh mere log hain (They are my people). But this would not work for the situations lacking *apnapan*. So, as we talked about how to turn the lists into a poem, I suggested that throwing it open as a question may be a better approach. This led to the use of the repeated line – Kya woh mere log hain (Are those my people)? Thus, each space was explored through a juxtaposition of situations chosen by them, where they experienced *apnapan* and where they did not, followed by the interrogative repeated line. The use of first person, of specific names such as Kitaab Mahal or nani ka gaon, of direct speech in some places were all suggestions that I made as stylistic devices that could be explored. Once the four stanzas were done, there were some other examples left and we talked of an introductory stanza that could be in any space. Thus, the opening stanza for both evoke the idea of fraternity, in K's poem through the idea of nations and in S's through the idea of friends and neighbours.

My asking them to create two lists – when they had felt a sense of belonging and when they had not – did create a binary of their experiences and it is likely that the reality is a more overlapping one (just like their sense of identity overlaps across class, caste, religion, gender, etc.) with the feeling of belonging, *apnapan*, being a spectrum. However, this was a constraint of the exercise and of the kind of time in which it had to be completed. It is also reflective of my role in the process that created a structure to examine the idea of fraternity in their everyday. This needs to be remembered (and an exercise can be followed up with more detailed work or interviews to explore the spectrum), but I do not think it takes away from the children's assessment of the particular experiences that they included or

from the meaningfulness of their writing. While the juxtaposition of situations is indeed present in each stanza, the use of the interrogative repeated line throws both situations up for questioning – questions to be considered both by the writer and the reader.

The finished poems offer a layered understanding of the different structural categories that intersect in the lives of these two teenagers. The examples that both use as a response to the prompt reflect the tapestry of everyday working-class lives – the tension within families that destabilizes the idea of family as belonging, the shopkeeper who may belong to the same neighbourhood but whose gaze makes him a predator, the power inequalities that make the poor vulnerable to police action rather than feeling protected by the police as citizens, the different kinds of teachers and classroom experiences that can forge a sense of belonging and un-belonging, the coming together of different people to celebrate a dalit festival and the dalit thinking of the masjid-goer who will lose the masjid when it is torn down. We cannot say for certain whether the articulation of these tensions changes the way these children will engage with the world and with others, but the articulation contains within it the possibility. As the child-writer asks the question in reference to different situations and people, she may or may not have arrived at an answer but she is considering the question of who her people are. This is "the mighty child" that Clementine Beauvais talks of, holding within the uncertain future, "more time left" in contrast to the adult's "more time past" in which all possibility is frozen (Beauvais).

Drawing from Beauvais' contention that the children's book may become the source that teaches the mighty child something that the adult does not know yet, it is my belief that the child's creative articulation may fulfill that same role of the children's book. For instance, in juxtaposing all those who live in India with all those who fight for Pakistan, K throws up the question of a forced belonging, of who gets to choose where to live and who to fight for. That is a question not just for us as readers but also for her as she orders her thoughts – are all the people of India really her people, even those who call her "chhoti jati" and stop their children from speaking to her? And so, could it be that she may actually feel a sense of *apnapan* with some who fight for Pakistan, even though they are across the border in a country that is a sworn enemy of India's? What if they are, for example, part of those who want to save the world's environment as she says in the last

stanza? Similarly, S complicates the idea of *apnapan* emerging from caste or religious groupings when she asks the question in her last stanza – are all those who celebrate Ambedkar Jayanti my people, are all those who destroy mosques my people? S is attuned to incidents about contested mosques in other parts of India, even though she is not Muslim and these mosques are not in her vicinity, because she feels a closeness to the Muslim family she has grown up with and this is an issue of concern for them. This is the mighty child's simple articulation that may teach both her and the adults what fraternity can mean.

This exercise is an example of a process of co-creation in which the framing is clearly adult-led. I chose the prompt, I chose the spaces to explore the manifestations of *apnapan*, I made suggestions on formal choices such as the use of direct speech or names. I definitely wielded authority. And yet, there was an element of uncertainty. I could ask the questions, make the suggestions but I could not control what they would respond with, what examples their lived experiences would throw up. Thus, the moment of writing each line was actually a moment where our differences and commonalities intersected. I brought my lived experiences through my thoughts to that moment and they linked that to their lived experiences to create the final line. It is a moment fraught with the possibility of several options, with the final choice being made by the agency of the child. And once that choice is made, the child reveals to both herself and to the adult the possibility that lies in the future – a way of reimagining *apnapan*, of redefining "my people".

Conclusion

Spyros Spyrou has written about research with children and made a case for the researcher's self-reflexivity so that we may acknowledge "the messiness, ambiguity, polyvocality, non-factuality, and multi-layered nature of meaning in 'stories' that research produces". This essay presents an example of that ambiguous, poly-vocal process with multi-layered meanings. The question – Kya woh mere log hain – emerging from an adult voice intersects with the multiple examples in the children's voices that infuse the question with a poignant simplicity. There may not be certitude at the end of the poems, neither for the reader nor for the child-author, but they certainly contain the possibility of multiple meanings. And so, by listening to what children say, might we find more meaningful and less restrictive ways of understanding ideas like community, public space, rights? When children express their thoughts in this form, will we listen and look at the world in a new way?

So, to go back to my friend's question (from the first part of this essay) – how do I cope with the darkness of the times? I think that while it is certainly swirling around us constantly, the darkness dissipates for me in little everyday chinks because I am privileged to work so much with children. It is not just about the lightness that interactions with children bring but also about the hope that they offer. Children carry the burden of futurity that may seem unfair as if the responsibility of fixing a broken world is simply transferred to them by a generation of abdicating adults. But this is in some ways inescapable – the future is a priori theirs and adults can only be allies in that. In that process, it should be incumbent on adults to excavate and glean the possibilities that exist in human interactions before they get tainted by prejudice, before we forget the simple ways of connecting over differences. Children's writer, Katherine Rundell writes, "So many children's writers and illustrators are themselves already hunters and gatherers of hope; manufacturers and peddlers of wonder." To work with children, to create art for and with them, is a process of discovering the world anew and remembering that there is always another way of being. To work with children gives us the privilege of holding on to light.

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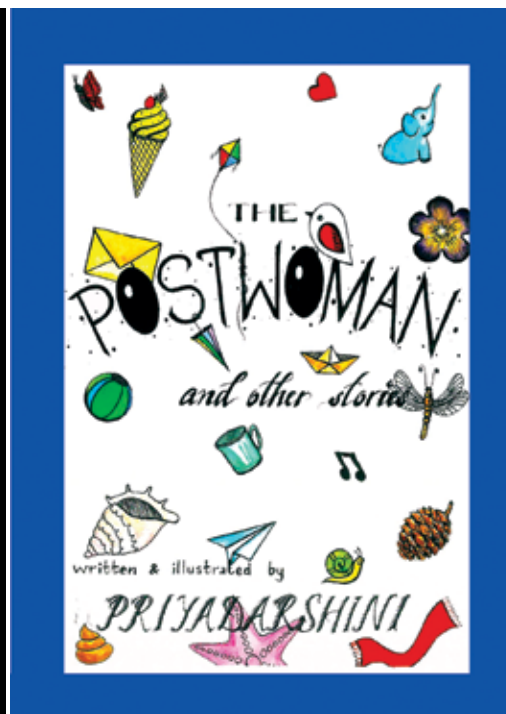 http://chd.sagepub.com/content/18/2/151

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A meditative experience

Simran Luthra

"If there's a book that you want to read, but it hasn't been written yet, then you must write it."
– Toni Morrison

These words by Morrison purportedly serve as the inspiration for Priyadarshini, the author of *Unsung Sheroes and Heroes* and *The Postwoman and Other Stories*, and the books indeed come across as a labour of love and as unique in their own ways.

Unsung Sheroes and Heroes is a collection of 16 portraits of people she considers have made 'small yet definite contributions' even though they are considered to be unintelligent and without any skill. In essence, they are portraits of ordinary people. But the beauty of Priyadarshini's eye (like that of any good writer) is that it elevates the ordinary to the extraordinary. She achieves this by zooming into their craft, the nuance, the skill, the complete focus, and absorption required to do the seemingly ordinary. This is quite in contrast to what a lot of children's literature does when it tries to deliver amazing facts or fantastical stories to children.

While we wouldn't bat an eyelid to think twice about the magic that takes place in the iron man's shop or pay much attention to the wall painters whose skill is what renders the dull city or town walls a lot more appealing, Priyadarshini's book is devoted exactly to such nondescript personalities. They are both individuals and also categories of occupations that have been relegated a marginal place in society. However, they aren't obsolete either: each of them performs functions that still have immense value and require skill and finesse of a different nature.

Mehendi Artists, The Parotta Master, The Wig Makers, The Basket Weavers, The Coin Collectors, The Jasmine Flower Sellers are some of the portraits she paints in this wonderful book. Each portrait is about a page long, but Priyadarshini's evocative use of the language makes it a rich reading experience, such that the reader emerges extremely satisfied at the end of each one, having gained an almost tactile sense of the work they do.

She also manages to evoke a variety of emotions in the reader ranging from wonder, awe, pity, respect

Unsung Sheroes and Heroes
The Postwoman and Other Stories
Author: Priyadarshini Panchapakesan
Publisher: Ukiyoto Publishing
Year of publication: 2022
Where to buy: www.amazon.in

for these heroes and also manages to infuse some thought-provoking social commentary. For instance, the portrait of the Palm Tree Climber ends with the words:
"When people bought his jaggery, they did not see a man who had conquered the world. In fact, they saw nothing at all."

Many of us would have had similar fleeting thoughts about the dexterity involved in simple occupations and indigenous crafts, but rarely do we dedicate much thought or time and dwell on them. Priyadarshini's book allows us to do exactly that. It's a celebration of the ordinary – of human skill and effort.

Her other book, *The Postwoman and Other Stories* is a collection of eight simple and charming short stories, meant to delight both children and adults. Each story begins with a quotation by an eminent personality, contains simple, colourful, line drawings, along with a story that is heart-warming in its own unique way.

The stories have a visceral quality owing to the power of description that Priyadarshini employs. The stories reflect simpler times where technology is almost conspicuous by its absence. The power of the stories is that they create a longing for the magic of simplicity and of closeness to nature as we see the characters spend considerable time observing and communing with nature or taking delight in things such as waiting for a letter or the magic of weaving a patchwork quilt or being curious about the sound of the ocean. So much so that the experience of reading the stories feels therapeutic.

The stories also show female characters with non-typical female jobs like those of a postwoman or a ferry keeper, which is refreshing. The world created in the stories is one where there is a palpable sense of community; a world in which relationships with 'service-providers' such as the soan-papdi man or the postwoman are easy, human, and meaningful. This is a world which is untouched by consumerism, one where working with one's hands is valued. It makes the reading experience a slow, meditative, and nurturing one; an experience and perspective that is much-needed in the frenzied times we live in today, where technology and loss of human connection are becoming the norm.

Also noteworthy are the wonderfully articulated preface and introduction of both the books which are short, but deep and insightful for parents and teachers and help set the mood for reading both the books. She states in the preface of her short story book: 'By the end of this book, I promise that you will feel a little more kindness and empathy in your hearts', and indeed one is moved likewise.

I would highly recommend both of Priyadarshini's books which are available on Amazon for a comforting read that can deeply enrich one's experience of the extraordinary every day for both children and adults alike.

Note: Priyadarshini Panchapakesan's new book, *The Myth of the Wild Gaur* can be pre-ordered at https://paperlanternbooks.blogspot.com/2023/01/tmotwgpreorder.html?m=1.

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Integrating content and language

Sanjhee Gianchandani

The process of English language learning has evolved over the years and adapted itself to the changing educational and cultural contexts and the transformative dynamics of contemporary classrooms. In contemporary times, learners are exposed to a variety of approaches to learning the language such as the use of ICT, realia, game-based learning, project-based learning, and the inclusion of 21st century skills in language learning.

Content and Language Integrated Learning (CLIL)

Basics of CLIL

01 The foreign language is used as a vehicle for accessing information.

02 The foreign language is used for instruction and communication.

03 Learning the language and learning content is part of the same process.

04 Development of cognitive flexibility & reflection up the linguistic & communicative functioning of both languages is key.

What does CLIL encompass?
A relatively new and underutilized pedagogical approach to language learning is CLIL or Content and Language Integrated Learning. David Marsh is noted for coining the term in 1994. The fulcrum of CLIL lies in studying a subject (for example, science, history, or literature) and learning a language simultaneously and thereby amalgamating the two. This definition is broad because a subject and language integration can occur in many different ways.

In the context of the Indian English-medium education system, CLIL refers to a generic term referring to the teaching of a curricular subject through a foreign language. The basis of CLIL is that the teaching-learning is carried out in a language that is not the mother tongue of the students. The end objective remains to learn the second language while the content is extracted through other subjects which the students already study as part of their curriculum.

It is a dual-focused approach in which both the content and the language are learnt simultaneously. CLIL classrooms are not typical language classrooms because language is just the medium through which content is "transported", therefore this approach produces a lot more immediate results and it appeals to self-motivated adult learners who possess a basic knowledge and understanding of the target language and are inclined towards learning it via vocational streams.

What are the core features of the CLIL methodology?
The successful implementation of a CLIL programme relies on the collaboration between language teachers and content teachers. Each is an expert in his or her field, so they need to share their respective ideologies and materials.

The content teacher
A content teacher is someone who teaches a subject – for example, biology, history, or art. This does not mean just teaching the subject in the English medium. These content teachers are not experts in language acquisition or pedagogy as they are experts only in their respective subjects. Therefore, to teach their subjects, content teachers usually require some amount of training in the language used to transact the knowledge. They may also use both their students' native language as well as English to disseminate information in their lessons. This technique is known as translanguaging. Content teachers also depend on the support of the language teacher in order to diffuse the elements of the language into their subject matter. Thus, both types of teachers have to work in close conjunction with one another in order to make CLIL successful.

The language teacher
A language teacher is principally responsible for teaching English (or another language), but in the CLIL programme, he or she also supports the content teacher by introducing relevant vocabulary and functional language related to a given subject and by emphasizing critical thinking.

Let us take the example of a history lesson. The content teacher explains the Civil Disobedience Movement through pictures, demonstrations, using the textbook in English, and if necessary, the students' first language. In parallel, the English language teacher might teach students the grammatical structures used for explaining the past tense (simple past, past progressive, and past perfect), the language to describe cause and effect (because of, due to, results in), and word forms (empire, emperor). In summation, the student has learnt both the concept of the Civil Disobedience Movement and is able to articulate or explain it using appropriate grammar and terminology.

The CLIL framework

The framework of CLIL is based on the 4Cs, i.e., Content (or the subject matter), Cognition (the process of learning and thinking), Communication (the process of interacting and using the language), and Culture (developing an understanding of the language). So, CLIL teaching is not only a matter of learning how to teach both content and language, but also how to integrate them. In this aspect, it is very different from immersion or content-based instruction techniques of language acquisition as it emphasizes the need to harmonize language and content-based learning rather than prioritizing one over the other.

According to Marsh et al. (2001), students cannot improve their content knowledge and skills without learning the language, because the subjects are discussed, constructed, evaluated, and embedded in the language. And the basic aspect of learning any language or developing fluency in it is to acquire as much vocabulary as you can. Vocabulary can be divided into three parts: basic vocabulary, academic vocabulary, and discipline-specific vocabulary. CLIL involves learning to use language appropriately while using language to learn the subject adequately.

In every CLIL lesson plan given by the University of Cambridge, ESOL examinations it is repeatedly insisted that "Every subject has its content obligatory language which means a subject-specific vocabulary, grammatical structures, and functional expressions". For instance, a chapter on 'Plants' in grade 3 science would have vocabulary such as 'photosynthesis', 'stomata', 'sunlight', etc., which are domain specific for science for that level and these words would not generally be found in any other subject. Similarly, "Two plus two equals four" is a grammatical structure which is typical to maths of grade 2, and the English stories being read by the students would not typically be written using such structures.

Therefore, each chunk of content associated with CLIL has a specific vocabulary and the teacher has to relate his/her teaching with the newly learnt vocabulary, which is also the preliminary step in the CLIL approach. CLIL materials can be adapted as per the needs and language level of the students. This is a more powerful approach to learning a new language as it focuses on the authentic use of language rather than learning it through decontextualized content fragments, memorizing grammar rules, or the cramming of curricular subjects.

The final word

The objectives of CLIL are varied, but among the most relevant are to improve the educational system, to establish the necessary conditions that will allow students to achieve the appropriate level of academic performance in curricular subjects, to develop intercultural understanding and to hone their social and thinking skills. Moreover, CLIL prepares students for the globalized world by increasing their motivation to learn foreign languages and cementing their intercultural competence.

As an approach, CLIL has been very successful in countries such as China, Malaysia, and Thailand in promoting content learning and language acquisition. In India too, CLIL is gaining currency slowly and steadily but needs some more research, the willingness to adopt, and flexible implementation. Some initiatives have been taken in this direction. For instance, CLIL@India a three-year project co-funded by the European Union under the Erasmus + Programme began in 2016 and was completed in 2019. It was a consortium of seven universities from India and Europe dedicated to developing a new model of bilingual education by introducing Content and Language Integrated Learning (CLIL) as an innovative pedagogical practice in the Indian education system to preserve the nation's multilingualism.

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Science and its PCK

Chandrika Muralidhar

Pedagogy must evolve to make education more experiential, holistic, integrated, inquiry-driven, discovery-oriented, learner-centred, discussion-based, flexible, and, of course, enjoyable. (NEP 2020)

Three and a half decades ago, as a novice teacher, I gingerly entered a grade 8 science classroom, armed with the textbook, my notes, and a detailed lesson plan. Thirty-five pairs of eyes looked at me and it made me wonder if this was how a point of congruence might feel! Was I nervous? Of course, I was, but also confident as my preparation for the class was thorough. The tremor in my voice subsided as responses from the students came in steadily and it turned out to be a satisfactory beginning. Looking back now after years of teaching I am not sure what it might have been like if that first class had turned out differently from what was planned. However, it is only fair to say that I have struggled many times to teach concepts like resonance, chemical kinetics and colligative properties, not with regard to my understanding of them, but making them comprehensible to the learners. So, I knew what I had to teach and the methods to do so, but what was probably missing was the connection between them which would contribute to the students learning the concepts. This leads us to explore the aspect of pedagogical content knowledge (PCK) in a science classroom.

> Good science teaching needs PCK
> **– Lee Shulman**

PCK for science teaching would first need an orientation towards it. This could mean a deep understanding of the nature of science, its process skills and indicators, scientific attitude and its indicators (UNESCO Sourcebook for primary science), and appropriate classroom resources. With these in place, PCK for science teaching could be about knowledge and belief about:

- Science curriculum.
- Students' understanding of specific science topics – how they think, how they reason, talk to other learners.
- What needs to be done – give them evidence, help them reason.
- Assessment in science.
- Instructional strategies for teaching science.

I am sure like me, many novice teachers begin their careers and face the challenges of teaching various topics in science. Unknown to them, they develop a PCK which enables them to create the appropriate classroom/lab environment, encourage student thinking and come up with tactics that include student understanding of the topic being taught.

An inquiry approach can serve as the hook by which teachers can capture student attention and promote conceptual change. The specific ways in which a teacher sets up and co-ordinates inquiry-based lessons for specific topics forms part of her PCK.

PCK of novice and experienced teachers

In several studies of the science teachers' PCK, teaching practice was found to be a function of familiarity with a specific domain. These studies concluded that teachers, when teaching unfamiliar topics, have little knowledge of potential student problems and specific preconceptions, and have difficulties selecting appropriate representations of subject matter. As a teacher at the senior secondary level, I faced a similar challenge when I had to teach the chapter on coordination chemistry. As a student I recalled my fascination for the topic, especially the isomerism exhibited by the complexes, yet as a teacher it took me a while to navigate the pedagogy for comprehension to happen. Moreover, when teaching unfamiliar topics, teachers express more misconceptions (Hashweh, 1987) and are known to talk longer and more often, and pose questions of low cognitive level (Carlsen, 1993). Researchers

also noticed that experienced teachers quickly learn the new content as well as adequate content specific instructional strategies, while relying on their knowledge of general pedagogy. The latter helps them maintain the flow in their classes. The authors concluded that pedagogical knowledge provides a framework for teaching that is "filled in by content knowledge and pedagogical content knowledge ... when teachers taught within and outside their science area" (Sanders et al., 1993, p. 733).

Two separate studies were conducted by Clermont, Krajcik, and Borko (1993, 1994). In the first study, the effects on PCK of an in-service workshop for novice demonstrators were investigated. As growth of novices' PCK toward that of experienced demonstrators was observed, the authors concluded that PCK "can be enhanced through intensive, short-term, skills-oriented workshops" (Clermont et al., 1993, p. 41). The second study investigated the PCK of chemistry teachers with respect to chemical demonstrations as an instructional strategy. The PCK of experienced and novice demonstrators was compared, concluding that experienced teachers possess a greater repertoire of representations and strategies when demonstrating a particular topic. It was found that they could use certain demonstrations more flexibly for various purposes and relate them more effectively to student learning than novices.

PCK in a chemistry classroom – the importance of questions

Let us look at an example of a chemistry classroom where the teacher was looking at various concepts – reversible, irreversible reactions, burning and combustion. Using one activity and urging the learners to question what they observed, the teacher set the tone for discussion of these concepts.

The teacher lit a candle and asked learners to observe the following and record their observations: Shape of the flame, height of the candle, the evaporation of wax, could this wax be collected, does the wax become something else.

Learners recorded their observations and asked some pertinent questions:

- Where does the flame go when we put out the candle?
- Will there be no flame when there is no vapour?
- Did the flame vanish because the reaction stopped?
- Why did the reaction stop?

- What is the flame made of?
- What is happening when the candle is lit? We feel the heat and see the light, so what kind of reaction is it?

With this single activity the teacher can discuss the four concepts mentioned earlier. She is devising a PCK in her classroom through an activity, some guided instructions and providing the opportunity for the learners to place their questions which will in turn support her to further explore the concepts.

In conclusion, it's the teacher's autonomy to create her/his PCK in the classroom by being mindful of her/his knowledge base which will enable her/him to teach specific topics effectively and flexibly in different contexts.

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Becoming a library practitioner

Sajitha

"What is a library?" is a question we never ask ourselves. Our understanding of the library is minimal and limited to the stack of books in school. Despite working in the education sector for 10 years, I too had never questioned the concept of a 'children's library'. There was never a doubt that a large number of books should be part of the classroom, but is making books available to children enough in a library? We bought books that we believed would help children learn. For instance, children are learning to read English, hence books that had simple English were part of our library collection. Since children are not able to read words with conjunct consonants in Marathi, we bought books without conjunct consonants so that children will 'benefit' from our collection. These were some of the criteria with which we selected books because I was sure 'I understand my students better' and hence bought books that I knew they would be able 'to read'.

This approach of looking at the collection in a library is coming from a person who is 'a reader', may not be a voracious one, but I enjoy and have had a very dear connection with books from childhood. My students browse through books when brought to them and even try to read, but no one remembers or has a favourite book.

The first day of my Library Educator Course at Bookworm (LEC) reminded me of this connection with books and its power. We reflected on our bonding with books and the strength of that bonding. The LEC journey helped me understand what the library as an institution can achieve, its strength, who has contributed to it and how. When you gain this knowledge and realize that what you have been doing is inappropriate or limited, you know that you need to make it right and therein started my journey as a library practitioner.

While learning the course, Bookworm helped us visualize what we are learning. And since the course was process driven, many learnings emerged through discussions and presentations. Sujata, Usha, Jane, and Teju (our mentors for the course) shared their journeys as library practitioners and they did it using children's books.

My plan was to open a library specifically for children in Kalyan, Maharashtra. Both at the personal as well as at the organizational level, I had to take decisions that I was not happy with, keep silent when I wanted to shout, and above all did not know what I was angry about, with whom or what to do about it. Building a library needs huge investment. I did not have that capacity. Luckily, I found a partner who envisioned a library for children. An avid reader herself, Rutu Maharshi, shared how books helped her stay positive and happy during the 2001 earthquake in Gujarat. Her passion for bringing books to needy children and her network of people who were

Photos courtesy: Sajitha

willing to invest in our project was crucial for building the library. Her organization, SPARSH TRUST works in the education sector in Gujarat and supports smaller organizations working in the education sector. With Rutu's support, the library was actualized. We named it EnRead.

A physical library, however beautiful, has no life until it has an apt librarian. For almost eight months, we struggled to get a good librarian. I appointed someone who was willing to work with the given honorarium and time limit. I believed that training would help her become a good librarian. My own absence due to my pregnancy did not help in the librarian's capacity building. The quality of the library was affected. It became more of a daycare centre. The librarian was not able to convey the objective of the library as she herself did not know what it was or had not internalized it. That initial phase was both positive and negative for us. The place welcomed children. They would make the librarian read their favourite story books. Another positive impact was that new parents started asking about the library and this led to defining and sharing the objectives of the library with my team. We conducted activities and workshops for children. The LEC team helped me with this during my maternity leave.

After I rejoined on a full-time basis, capacity building of the team began. The following month though, the trained librarian resigned. The new librarian is an arts graduate by qualification, is an avid reader and has had some experience working with children. When working in an urban area and with minimal resources, getting highly skilled people is always a struggle. The new librarian's interest in reading and interacting with children has improved the quality of the library. Our library is now set and the membership is also growing. Parents are happy that their children have access to books in their mother tongue, Marathi. One of the parents mentioned that her seven year old started reading Marathi because

of the interesting story books here. Arya, a 4 year old member of our library, after a week-long vacation wanted to come to the library first even before going home. Parents who are worried about children's technology addiction look to the library as a space for their children to connect with other interests.

Victor Sensenig, an educator and researcher, in his article (Sensenig, 2017)* which we read as part of our LEC course, envisaged the role of the library as an invaluable collaborator with schools and communities. He explains how in America, the role of the library in a school's achievement was realized and the country started investing in libraries. With NEP 2020, India is now starting to focus on quality education and this is the moment to recognize the role of the children's library. Investment in children's collections in public libraries and in every school should be made mandatory. At SAJAG (an organization that works with low-income communities in Kalyan, Maharashtra and helps them access basic quality education), our mission is to partner with schools and public libraries in Kalyan. We have started our work in this direction. To begin with, we shared my learnings at LEC with the teachers at a school we have been closely associated with and had a fruitful discussion on how books shaped our lives. A regular discussion with teachers, schools, public libraries, and a way forward to strengthening existing libraries and making them more accessible and of better quality is our next mission.

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The sports coach

An invaluable part of a sportsman's career

Anuradha C

Football legend Lionel Messi (L) Argentina national football coach Lionel Scaloni (R)

Photo courtesy: Instagram/@leomessi

Photo: jmmuguerza, courtesy: www.wikipedia.org

The greatness and glory achieved by a successful sportsman is out there for all to see and admire. He becomes an instant sensation, a hero for the masses and an icon to emulate. However, not many in the audience spot the silent man standing on the sidelines, beaming with pride at the success of his protégé.

The most recent occurrence of this phenomenon was a grand show during the Football World Cup held in Qatar. Argentina's football legend Lionel Messi was soaking in all the laurels while Argentina's National football coach Lionel Scaloni stood rock solid in the background, relaxing after a job well done.

Teacher Plus brings stories of all kinds about teachers. However, most of our focus has been on academic teachers. The invaluable and often under-rated role of a sports coach is the focus of my story today.

What is unique about a sports coach?

The role of an academic teacher in a student's life lasts as long as the student remains associated with the academic institution. As soon as the student graduates out of his/her school or college years, the association ends. After that period, the teacher might transform into a benign well-wisher, but the active influence ends.

However, a sports coach is a unique sort of teacher. He/she remains the most important influence in a sportsperson's professional life throughout the length of their sports career. A 41 year old Roger Federer has a tennis coach still working with him every single day!

Unlike regular teaching, coaching is not an offline activity in sports. Here, the ward doesn't walk away to perform their job, succeed or fail on their own. A sportsperson is constantly training with his coach, sharing his/her trials and tribulations on the field on a day-to-day basis. The coach constantly works to bolster the player's strengths and eliminate the weaknesses. They work as a team; the career success of the player is their joint responsibility.

A good player makes a good coach?

In sports, apart from the nuances and techniques of the sport itself, there are several other considerations that determine the success or failure of a player. The player's ability to handle pressure, physical and mental fitness, team cohesion (for team sports), commercial engagements, relationship with fans/audience, positivity and killer instinct – the list is exhaustive. A sports coach would have to hand-hold a player through all these aspects.

It helps a lot if the coach has gone through the same journey during his playing days. The pain of a loss, the gruelling physical discipline to be followed, single-minded focus – since the coach has experienced them all, he is easily able to relate to the players' challenges. However, in most cases, a super successful player doesn't have the temperament to become a successful coach in his later years. It is those players whose careers have come to an abrupt close due to injuries or who haven't made the cut into their state/national squads that are the most successful coaches. They deign to relive their career dreams through the journeys of their wards.

Pullela Gopichand might have had a decent run as a player, but his record as a badminton coach is astounding. Through his sporting academy, he has constantly been churning out world champions from India over the last few years! His influence over the sport is so great that he is in the position of shaping the sporting policy of the entire country in association with the Government of India.

Sports coaches are a precious commodity, especially in rural India

Every year, millions of aspiring young boys and girls take up their favourite sport, hoping to make a career out of it, in India. However, the ratio of players who manage to build a successful career in sports is miniscule. Though that's the dream which every player pursues, most of them just turn out to be "also-rans".

The role of the coach is vital to enable this leap from mediocrity to excellence. The tireless patience and keen eye of a university football coach or the coach of a sports academy in your hometown may discover a gem in the making. Once the coach spots raw talent, it is his responsibility to help the player reach his potential.

The problem with the sports eco-system in India is this. Kids in the big cities can afford to spend a fortune to enroll into flagship sports coaching centers. However, the real raw talent lies in our hinterlands, but we don't have adequate talent scouting and honing programs in rural India. Recently, the Government of Punjab released a press report about this inequity. "Even though the state government is spending over Rs 200 crore to promote sports in rural areas by distributing free kits and track suits to the rural youth in the state, only three out of the 31 coaches employed with the District Sports Department are serving in rural areas here. While the youths from nearby areas are able to travel to their nearest sports center situated in the city, those living in remote areas are, till date, unable to get access to a qualified coach who can sharpen their talent for the game of their choice." The state government, in a recent scheme, is providing a complete set of sports kits, including sets of various balls, a cricket kit, hockey sticks, a five-station gymnasium and over 500 track suits, to villages in the state to promote sports in Punjab. However, with no coach to provide training in rural areas, the kits are expected to gather dust, causing a loss of over Rs 200 crore to the exchequer.

Bouquets, yes. But the brickbats too!

The flip side of being a celebrity sportsperson's coach is – the player flops in his sport and the coach is the one to get fired from the job!

But for all other lesser mortals pursuing a sporting career, their coach is the gateway to their dream universe. The "Dronacharya Awards" constituted by the Government of India aptly recognizes our revered sports gurus. India is harbouring major ambitions in the sports domain in the coming years. For instance, we want to host the Olympics in a decade. The role of sports coaches in bringing all our grand plans to fruition is absolutely vital! Let's ensure our coaches get their due share of remuneration and recognition, after all they are the ones who are going to help realize our collective sporting aspirations.

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Making classroom discussions relevant

Sakshi Uniyal

"Plastic as a nuisance" is a very common essay that almost every school going child in India writes at least once during their 12 years of schooling. The issue of plastic waste is an integral part of the middle school CBSE science curriculum. Throughout grades 6-8, young children learn about the non-biodegradable nature of plastic, how it saturates our daily lives and as a result, chokes our ecosystems. Despite a minimum three year-long engagement with the idea of the potential catastrophe that plastic waste is, Indian children seem unable to grasp the real-life manifestation of problems they discuss within the four walls of the classroom. One of the biggest examples of such a paradox is the usage of thermocol, a type of plastic, to make models on "Say NO to plastic". Such a sight is very common whenever science fairs or exhibitions are organized in schools.

Chemically, thermocol is expanded polystyrene or EPS, also known as styrofoam. Owing to its low cost, durability, and light weight, it is widely used by school children to prepare a variety of '3D models' for exhibitions or school projects. Another advantage of using thermocol is the ease with which it can be moulded into desired shapes using nothing but a hot paper cutter. However, it carries high environmental costs. The same properties that make thermocol desirable as raw material for school projects make it one of the greatest environmental hazards. Its light weight and high volume make recycling of polystyrene products economically unviable. All such projects made using thermocol, therefore, end up in our already choked landfills. In fact, polystyrene is estimated to occupy a shocking 30 per cent share in landfills worldwide. Yet, questions about environmental costs of polystyrene are conspicuous by their absence from discussions on plastic waste in our classrooms.

If we analyze the usage of thermocol by children more closely, we will find that the paradox is not limited to the one visible on the surface, but goes much deeper to an epistemological level. A cursory examination of the nature of projects made using thermocol reveals its holy grail status among school children. It is the cheapest and quickest answer to all school project problems – be it the depiction of the structure of an atom for the science class, or the solar system for geography class, or different types of quadrilaterals for the mathematics class. The usage of the same material to represent the structure of atoms, the solar system, and quadrilaterals exposes the inability of our children to pay attention to the fundamental properties of materials. Furthermore, it is common to find both atoms and planets represented with roughly similarly sized thermocol circles. This is indicative of a deeper problem in our classrooms which can be seen as a result of the growing dominance of technology in our educational spaces, as described by Marshall McLuhan and Neil Postman.

As our classrooms become more technology driven, we increasingly internalize the idea that technology undoubtedly leads to better learning. We applaud the ability of technology to make even abstract ideas tangible and easily visualizable for learners. In doing so, we disregard the crucial skill that abstraction is in itself. By making 3D animation of an atom visible to learners on a screen, we deprive them of the opportunity to construct the idea of an atom within their own minds and grapple with the confusion such an exercise brings. Absence of such a confusion means that the child will not need to put any effort to resolve it. As a result, learners remain incapable of comprehending the true dimensions of an atom and see no conceptual fallacy in using same sized circles to represent atoms as well as planets. As a grade 11 science student, I myself struggled deeply to visualize the atomic orbitals that were supposedly present inside each atom. My mind could not find overlaps between Bohr's model of atom that we had been trained to visualize till grade 10 and the sudden new concept of atomic orbitals. I remained puzzled as to how the s, p, d, and f orbitals could fit inside a tiny

atom. My inability to gauge the size of an atom as well as to think about a concept as abstract as atomic orbitals is clearly evident here. It took me a long time to resolve this contradiction that remained the highlight of my secondary school chemistry classes. In saying so, I do not mean to negate the value of technology for our classrooms. I am however convinced that a complete surrender to technology as the primary pedagogic tool does more harm than good.

While the introduction of technology can sometimes supplement classroom learning, my apprehension lies in complete erasure of the teacher's agency in choosing the most appropriate supplementary tool for her classroom. Moreover, it goes without saying that such contradictions as the one I struggled with are quite possibly the norm for lakhs of children in our country. The high degree of abstraction that secondary level science demands is never achieved by a majority of learners and the coping mechanism adopted to deal with it remains rote memorization. Such a strategy causes the formation of watertight

HISTORICAL with DEVELOPMENT
CURRENT INNOVATION

boundaries between what is learnt in the classroom and what can be useful in everyday life.

Having drawn such strict boundaries between the classroom and their real life, we have a multitude of learners who do not think there is any connection between the disposable paper cups they use every day for their morning coffee and the mountains of garbage in their city. They can be easily influenced by market forces to become mindless consumers. Our dying planet bears testimony to this single-minded drive for consumption. Since the market thrives on the demand and supply rule, products such as thermocol will continue choking our planet as we use and create more demand for it. This demand can only be curtailed by making our children capable of questioning the need for such products and looking for sustainable alternatives. This can only be possible in classrooms that nurture children's innate curiosity and do not rely on technology to create meaningful learning experiences for learners.

The Supreme Court's decision to include environment education as a compulsory subject at all stages highlights the gravity of the situation quite well. Unfortunately, like many other well-intentioned schemes, inclusion of environment education as a separate subject did not work as envisioned at the level of implementation. In many cases, it was reduced to yet another collection of facts which was simply memorized by learners for examinations. Thus, the issue that we tried to address by the introduction of environment education remained unresolved – we continue to see learners using disposable pens made of plastic to write essays on plastic pollution. Even if implemented as envisioned, I believe such a step would be a band-aid solution at best to an issue that demands deep reflection and deliberation by all stakeholders.

Environment education is not limited to isolated bits of information about contemporary environmental issues. By introducing it as a separate subject, we could end up reinforcing the idea of strict compartmentalization of knowledge. Such an idea is contradictory to the nature of knowledge itself, which exists as a unified whole instead of discrete subject-specific units. Development of observation skills in the science classroom will not only enable a learner to observe the parts of a plant, but also the rising piles of plastic waste in her immediate environment. Similarly, the mathematization of a child's thought process will empower her to estimate the environmental cost of her daily life decisions, such as repairing leaky taps or taking a public transport as opposed to her private vehicle. A holistic view of knowledge would thus help young children in transferring the ideas and skills learnt in the classroom to a variety of real-life situations. It is only then that we can expect children to see the relevance of classroom discussions to their immediate environment and ultimately the whole ecosystem. Such a child would be able to connect the usage of thermocol for her project to the news article she reads about the garbage mountain in her city and feel confident enough to reject thermocol in favour of more sustainable alternatives. Raising young children capable of doing so would be our most significant step towards the conservation and protection of our environment.

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